Final Report

of the

BASELINE DATA RECONSTRUCTION FOR THE QUALITY ASSURANCE FOR FISH MARKETING PROJECT

(QAFMP)

Submitted to

ICELANDIC INTERNATIONAL DEVELOPMENT AGENCY (ICEIDA)

And

DEPARTMEMNT FOR FISHERIES RESOURCES (DFR)

By

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(NaFIRRI)

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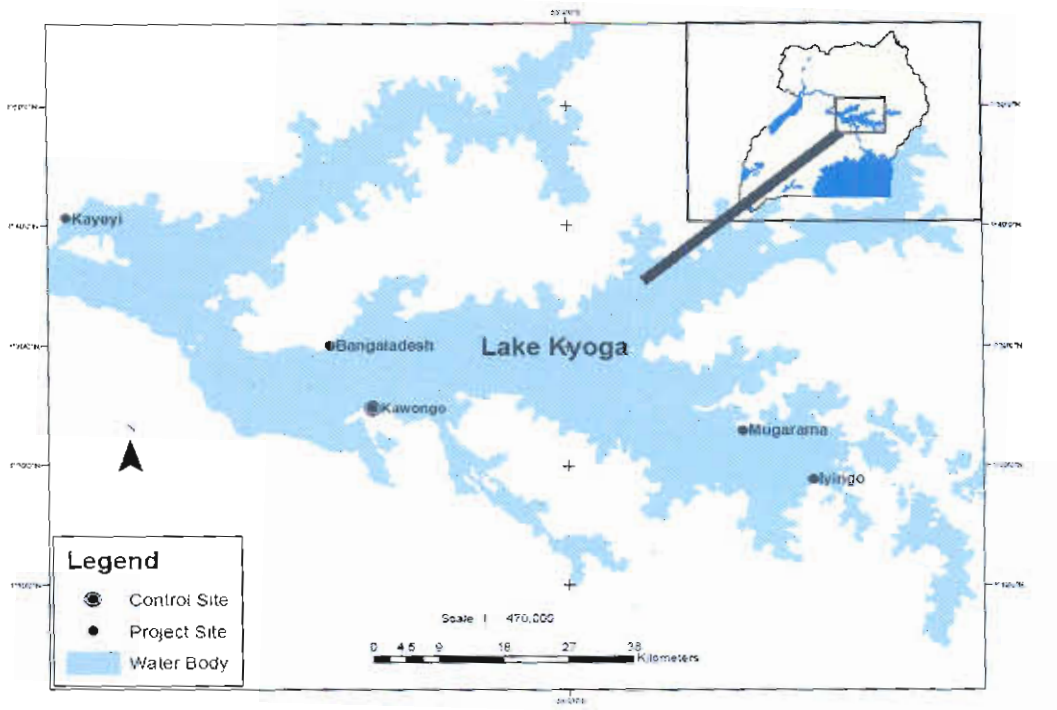

Fig. 1: Showing QAFMP improved and control landing sites on Lakes Kyoga and Kwania.

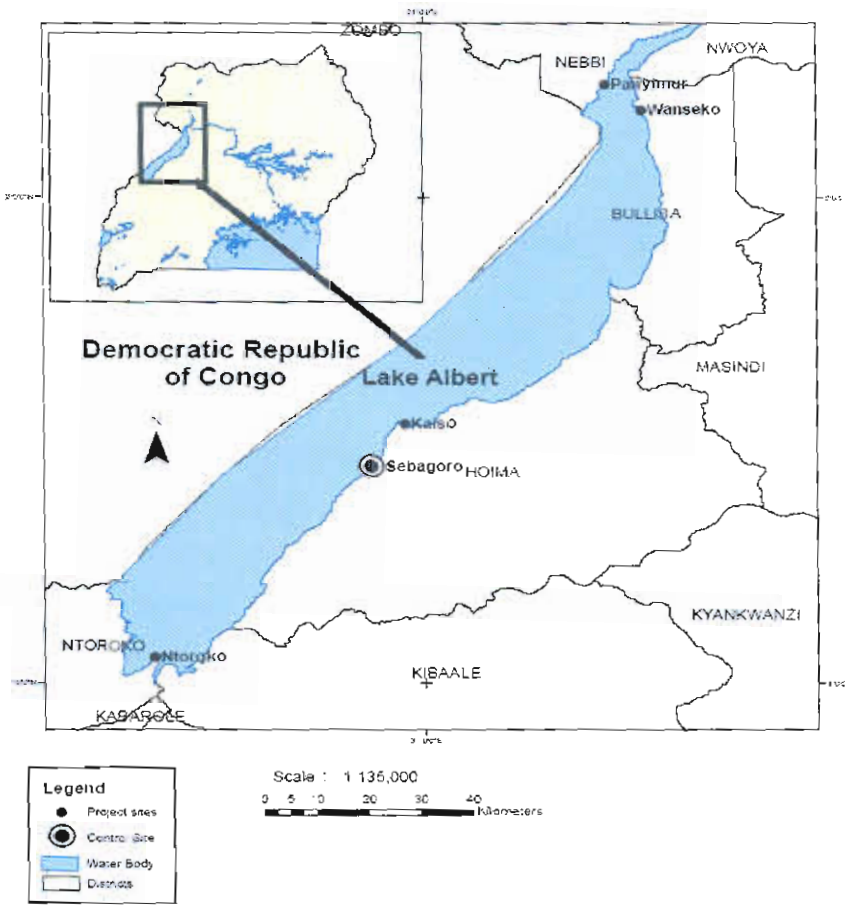

Fig. 2: Showing QAFMP improved and control landing sites on Lake Albert.

Acronyms

BMU	Beach Management Units
CAO	Chief Administrative Officer
CAS	Catch Assessment Survey
DFO	District Fisheries Officer
DFR	Department of Fisheries Resources
DRC	Democratic Republic of Congo
FO	Fisheries Officer
FS	Frame Survey
ICEIDA	Icelandic International Development Agency
IFMP	Implementation of Fisheries Management Project
LEAF	Lake Edward and Albert Fisheries
LVFO	Lake Victoria Fisheries Organisation
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NaFIRRI	National Fisheries Resources Research Institute
NARO	National Agricultural Research Organisation
NUSAF	Northern Uganda Social Action fund
PRDP	Priority Reconstruction and Development Programme
QAFMP	Quality Assurance for Fish Marketing Project
SOP	Standard Operating Procedures
UBOS	Uganda Bureau of Statistics

Executive Summary

Introduction

The Quality Assurance for Fish Marketing Project (QAFMP), implemented by the Department of Fisheries Resources (DFR) with funding support from the Icelandic International Development Agency (ICEIDA), was aimed at reducing poverty and improving the livelihoods of people in fish dependent communities on Lakes Kyoga and Albert. The activities included construction of landing sites and offices for District Fisheries Officers (DFOs) and training for Beach Management Units (BMUs), fish inspectors and DFOs, among others.

A baseline survey for the project which had been conducted in 2009 had gaps that could not allow assessment of project performance in the outcome and impact indicators to be made. This study was, therefore, commissioned to reconstruct the baseline data, aligned to the impact and outcome indicators on the project logframe and results framework, against which project achievements could be assessed.

The purpose and scope of the study was to reconstruct the baseline data and analysis describing the situation prior to QAFM Project inception, taking 2008 as the baseline year, which was aligned to the project logframe outcome and impact indicators; to collect data on current status to compare project outcome (and where possible impact) in improved fish handling sites in comparison with the baseline as well as with comparable non-improved fish landing sites as control group.

The study was conducted through secondary data search from sources at NaFIRRI, DFR and ICEIDA. Field data collection was carried out using a sample survey covering 312 respondents including boat and gear owners, crew members, processors and traders at eight project and two control landing sites. Key Informant Interviews were conducted with DFOs and BMU leaders in the study districts and landing sites respectively.

Baseline reconstruction

The mean population per landing site at project and control sites were 3,715 and 2,500 respectively. Literacy levels given by respondents able to read vernacular were 12.90% and 24.19% respectively while numeracy levels given by those able to write numbers were 7.26% and 12.90% respectively. Some 36.4% of the respondents had migrated from one landing site to another prior to the project.

With respect to impact indicators, annual household incomes for the main fish species at project and control sites respectively in million Shs were: Nile perch (12.9 and 11.7), Tilapia (16.2 and 16.0), Mukene (8.7 and 6.8) and *B. nurse/ N. bredoi* (14.0 and 12.6).

Livelihood indices, indicated by respondents who had access to schools were 82.66% and 87.10%; health centres 64.11% and 80.65% and HIV/AID information services 77.82% and 83.87% respectively.

Disease infection, with respect to cholera at project and control sites was 12.90% and 17.74% respectively and diarrhea/ dysentry was 59.27% and 56.45% respectively.

Adoption of alternative livelihoods were crop farming (50.81% and 33.87%); livestock farming (45.97% and 29.03%) and commodity trade (17.74% and 14.52%) for project and control sites respectively.

Household livelihood diversification, revealed by contributions of fisheries to total household incomes were 72.0% and 80.0% respectively.

With respect to food security, respondents who ate 3 meals a day were 56.2% and 76.9% and the amounts of fish eaten were 2.5 and 2.2 kg per day at project and control sites respectively.

Expenditures on basic needs in Shs were: food items (8,685 and 11,337 per day), health (31,345 and 52,235 per month), education (229,218 and 342,738 per term), clothing (104,067 and 169,884 per year) and saving (162,717 and 306,761).

Values of the main assets owned by respondents in Shs million were: brick & iron roofed houses (3.27 and 3.81) and land (4.73 and 2.19).

Baseline outcome indicators revealed that post harvest percentage economic losses were Nile perch (-3.8% and -7.4%), Tilapia (-3.67% and -18.0%), Mukene (-2.73% and -1.0%) and *B. nurse/ N. bredoi* (-2.1% and -22.4%).

Average volumes of fish marketed at project and control sites in tonnes were 1,935 and 1,846 respectively.

Average proportions of catch marketed at project and control sites were 77.0% and 66.8% respectively.

Average values of marketed fish at project and control sites were Shs million 17,118 and 16,054 respectively.

Respondents who had access to the beach market were 65.32% and 69.35% while those with access to fish market information were 42.74% and 45.16% at project and control sites respectively.

Current status

Current results with respect to impact indicators, annual household incomes for the main fish species at project and control sites respectively in Shs million were: Nile perch (10.9 and 9.6), Tilapia (13.7 and 12.3), Mukene (24.7 and 21.4) and *B. nurse/ N. bredoi* (23.3 and 18.2).

Livelihood indices, indicated by respondents who had access to schools were 99.19% and 96.77%; health centres 74.60% and 93.55% and HIV/AID information services 91.94% and 93.55% respectively.

Disease infection, with respect to cholera at project and control sites was 10.48% and 14.52% respectively and with diarrhea/ dysentry was 66.94% and 62.90% respectively.

Adoption of alternative livelihoods were crop farming (54.84% and 45.160%); livestock farming (54.84%and 43.55%); commodity trade (18.55% and 19.35%) for project and control sites respectively.

Household livelihood diversification, revealed by contributions of fisheries to total household incomes were 70.3% and 75.5% respectively.

With respect to food security, respondents who ate three meals a day were 59.5% and 75.0% and the amounts of fish eaten were 2.7 and 2.5 kg per day at project and control sites respectively.

Expenditures on basic needs in Shs were: food items (15,283 and 14,310 per day), health care (61,083 and 76,643 per month), education (381,466 and 499,795 per

term), clothing (200,923 and 197,337 half yearly) and Saving (184,518 and 229,766 per month).

Values of the main assets owned by respondents in Shs million were: brick & iron roofed houses (7.17 and 9.34) and land (9.6 and 7.09).

Respondents who perceived improvements in their livelihoods since the project start at project and control sites were 74.60% and 29.03% respectively

Baseline outcome indicators revealed that post harvest percentage economic losses at project and control sites respectively were Nile perch (-1.6% and -6.5%), Tilapia (-3.1% and -18.1%), Mukene (-2.03% and -0.8%) and *B. nurse/ N. bredoi* (-0.9% and -12.4%)

Average volumes of fish marketedat project and control sites in tonnes were 1,975 and 1,874 respectively.

Average proportions of catch marketed at project and control sites were 94.02% and 54.8% respectively.

Average values of marketed fish at project and control sites were Shs million 59,532 and 32,536 respectively.

Respondents who made use of improved infrastructure and facilities at project and control sites were 57.96% and 65.64% respectively.

Respondents who had access to the fish buying trucks were 64.92% and 74.58% while those with access to fish market information were 62.90% and 70.97% at project and control sites respectively.

Comparative analysis

At the impactlevel, between baseline and the current year, net revenues of fishing units declined at project and control landing sites for Nile perch and Tilapia, with lower percentage declines at project (-15.25%) than at control (-18.72%) sites.

Fish prices increased at project and control sites for Nile perch (75.63% and 56.49%), Tilapia (37.93% and 145.85%), Mukene (173.08% and 91.67) and *B. nurse/ N. bredoi* (156.38% and 85.00%).

Livelihood indices at project and control sites, represented by acces to education, increased by 17.26% and 15.15% respectively and for health services increaesed by 17.65% and 15.56% respectively.

The proportions of households that perceived improvements in their livelihoods at project and control sites were 74.60% and 29.03% respectively.

At the outcome level, percentage changes in post harvest lossess at project and control sites respectively were as follows: Nile perch (-57.30% and -15.56%), Tilapia (-15.56% and 0.56%), mukene (-25.61% and -20.00%) and *B. nurse/ N. bredoi* (-59.52% and -44.64%).

Percentage changes in volume of fish marketed at project and control sites were 2.05% and 1.54% respectively.

Percentage changes of catch marketed at project and control sites were 17.04%and -8.00% respectively.

Percentage rise in value of fish marketed at project and control sites were 247.78% and 102.67% respectively.

Between project and control sites, percentage differences for functionality of facilities was 16.56%. For usage, the percentage difference was 7.68%

While beach markets remained the main market outlet for most respondents over the period, access to factory agents and industrial processors declined due to declining catches of Nile perch and tilapia

The proportional change in respondents reporting good access to trucks between baseline and current years at control and project sites were 64.29% and 50.00% respectively

Percentage increase in respondents who rated their market information as being "good" at project and control sites were 47.17% and 57.14% respectively.

Conclusion

Reconstruction of baseline has been made possible through the use of available reports of previous studies, records of BMUs and DFOs, field sample survey and key informant interviews. However, challenges were identified with the primary data, attributed to inability of respondents to recall data and information over a long period.. As a result, the data and estimates for the reconstructed baseline indicators are moderately reliable. Current data and indicators are, however, more reliable due to the short recall period involved.

To replicate the evaluations, a sample survey of fishers should be conducted, supplemented by FS, CAS and Key Informant Interviews with DFOs and BMU leaders.

The lesson for future projects was, therefore, to get the log frame right from the beginning of the project so that the real time baseline study can provide the necessary information on the impact and outcome indicators for subsequent evaluations.

Table of contents

List of Tables

List of Figures

Page

CHAPTER 1:
INTRODUCTION

The Department of Fisheries Resources (DFR) has been implementing the Quality Assurance for Fish Marketing Project (QAFMP), with support of the Icelandic International Development Agency (ICEIDA). The project, which is scheduled to run between 2009 and 2013, is aimed at reducing poverty and improving the livelihoods of people in fish dependent communities. This is to be achieved through improved quality and safety of fish for the domestic, regional and global markets. The immediate objective is to increase volume and value of marketed fish on the domestic and export markets.

The main project activities includes construction of landing sites and offices for District Fisheries Officers (DFOs) and equipping the offices; training for Beach Management Units (BMUs), fish inspectors and DFOs and producing quality assurance manuals for fish inspectors.

In 2009, a baseline survey for the project was conducted, covering 9 Districts on Lakes Kyoga and Albert. It provided general information on the landing sites covering fish production, catch volumes and values, fish species, boats and fishermen. For each of the 9 districts, it identified constraints and gaps to fisheries activities, established training needs of staff and resource users, educational levels within staff and BMU leadership, numbers of fisheries staff and BMU leaders and availability of training facilities for BMUs.

However, the mid-term project review conducted in 2012 revealed that the original baseline results did not provide data aligned to the project indicators, especially at the impact and outcome levels, hence it could not allow evaluation of project performance in the outcome and impact indicators. At best, the original baseline results could be used in monitoring the outputs of the project, namely facilities and training provided.

DFR, therefore, requested for this study to reconstruct the baseline data and analysis describing the situation prior to QAFMP implementation in 2008, against which progress could be assessed, in line with the project log frame and results framework. Unlike the original baseline, this study is structured on the impact and outcome indicators as given in Appendix 5. While no direct comparisons may be possible between results of this study and those of the baseline due to differences in focus, this report should be seen to complement the first, building on it and taking it to a higher level that would meet the requirements for impact and outcome assessment of the project achievement

This is the final report on the study, prepared to provide results to DFR and ICEIDA on the baseline reconstruction, current status and comparative analysis of the impact and outcome indicators.

1.1 Objectives

The purpose and scope of the study were as follows:

i) To reconstruct the baseline data and analysis describing the situation prior to QAFM Project inception taking 2008 as the baseline year which is aligned to the project logframe outcome and impact indicators.

ii) To collect data on current status to compare project outcome (and where possible impact) in improved fish handling sites in comparison with the baseline and comparable non-improved fish handling sites as control group.

The specific objectives are as follows:

i) Design a baseline data reconstruction study methodology and data collection tools

ii) Conduct the study to obtain baseline reconstruction data.

iii) Collect current data on the indicators.

iv) Present a report on the results.

1.2 Expected outputs

i) Comprehensive baseline reconstruction study design developed.

ii) Comprehensive baseline and current data collected and analysed and results report produced, covering:

- Data collection design, methodology and activities.
- Baseline data reconstruction for the impact and outcome indicators
- Current status of the indicators.
- Comparison of current with baseline reconstructed data.
- Conclusion and recommendations.

iii) Submission of report and the data sets in electronic and hard copies.

1.3 Background of the control landing sites

The study was designed to cover landing sites where project infrastructure and facilities had been established and those where they were not established as control. The Client requested that all the eight project landing sites be covered and the budget could only allow for two control landing sites. The criteria were that the project improved landing sites had been provided with a platform with slab and shade, toilet and wash rooms, parking area, waste pit and fencing while the control landing sites did not have them. The control landing sites selected were Sebagoro and Kawongo. Characteristics of the control landing sites compared to the project improved sites are given in Table 1. Sebagoro in Hoima District was close to Kaiso and bigger than Panyimur but smaller than Kaiso, Ntoroko or Wanseko on Lake Albert, according to the characteristics in Table 1.. Kawongo in Kayunga District was close to Bangladesh in Amolatar District. It was bigger than Iyingo and Mugarama but smaller than Bangladesh and Kayei on Lake Kyoga. The control landing sites were, therefore, appropriately selected because they were close to the project sites, fell between the small and the large project sites and did not have the infrastructure and facilities for which the impacts and outcomes were being studied.

CHAPTER 2:

METHODOLOGY

The baseline data reconstruction was conducted using a combination of methodologies, namely secondary data search, recall using a questionnaire sample survey and Key Informant Interviews using a semi-structured instrument. The data collection tools are given in Appendix 4.

The study was planned for 8 Districts, covering 8 project intervention and 2 control landing sites on Lakes Kyoga and Albert. Infrastructure at the project sites of Kaiso and Panyimur were not yet operational at the time of study, hence they were not included for current data in some calculations where they would distort the results. The list of landing sites visited is given in Appendix 1.

2.1 The process

The activities carried out were as follows:

Comprehensive baseline data collection/ study design was carried as follows:

i) A technical team meeting of members from NaFIRRI, DFR and ICEIDA discussed the baseline data reconstruction design.

ii) Following revision of the project Logframe and Results Framework by ICEIDA, the questionnaire and key informant interview checklist were drafted and circulated to ICEIDA and DFR for comments.

iii) Training was provided to data collectors at station and in the field after pretest at Bukungu Landing Site.

iv) The data collection tools were pre-tested at Bukungu Landing Site for clarity, relevance and appropriateness. This was followed by a technical team meeting of NaFIRRI, ICEIDA, DFR and Buyende District Fisheries staff, held in Kamuli to review the comments for improvement of the tools.

2.2 Data sources and reliability

Secondary data and information for reconstruction of baseline information have been obtained from NaFIRRI, DFR and ICEIDA and reviewed, including:

i) Frame Survey (FS) reports of 2007 and 2012: The frame surveys were conducted using the Standard Operating Procedure (SOP) for FS developed and approved by Lake Victoria Fisheries Organisation (LVFO), involving a complete census of landing sites, boats, gears, fishers and facilities and physically verifying and recording them (LVFO 2007a). The data sheets had been designed and tested and the personnel, drawn from NaFIRRI, DFR, Local Governments and BMUs, were trained prior to the exercise. The analysis were carried out in accordance with the SOP and the results have been published in a refereed journal (Taabu-Munyaho *et al* 2012);. The data source is, therefore, reliable.

ii) Catch Assessment Surveys (CAS) reports of 2007 and 2012: CAS were conducted by specialists from NaFIRRI, DFR and Local Governments and involving BMUs. The SOP for CAS approved under LVFO was used, involving probability sampling applied in selection of sample landing sites, boats and days (LVFO 2007b). Samples from commercial catch have been weighed using accurate scales. Analyses, presentation of results and the selection of

raising factors to estimate annual lake-wide catches and values have been in accordance with the SOP and the results have been published in peer reviewed journal (Mbabazi *et al* 2012). They are, therefore, reliable.

iii) Previous socio-economic survey reports of the two lake systems: These had been conducted by NaFIRRI, in collaboration with the Local Governments and BMUs. The Harmonised SOPs for socio-economic research and monitoring, developed and approved under LVFO, were applied in the design, data collection and analysis (LVFO 2005). The findings were presented and accepted by stakeholders at the relevant workshops (Odongkara *et al* 2013; Odongkara *et al* 2009; Odongkara *et al* 2007). The results are considered credible.

iv) QAFM Project baseline survey report obtained from ICEIDA. The accuracy of the information in this report is unknown. However, only limited comparison was made of the reconstructed baseline with the results of the original baseline report, so its quality did not influence the quality of the baseline reconstruction, the current data and analysis,

v) QAFM Project Mid-term review report was also obtained from ICEIDA. The quality of the data is also unknown. However, since it did not provide any information on the indicators, it did not have any influence on the reconstructed baseline, current data or analysis of changes.

vi) The revised logical framework (LOGFRAME) and project implementation arrangements for QAFM Project document was obtained from ICEIDA. It was not clear if the indicators had been pre-tested, so their suitability remained to be established under the baseline reconstruction study.

vii) Records of fish quantities landed and prices from District Fisheries Officers and BMUs:the sampling design for the data collection was developed by specialists from NaFIRRI and DFR and weighing scales and data recording sheets were provided. However, implementation of the data collection at the landing sites was not supervised. The data was often incomplete and analysis was partially done. the estimates were, therefore, moderately reliable.

viii) Fish Movement Permit data on fish species and volumes: The exercise was instituted at all landing sites and receipt books provided to BMUs for it. However, coverage was incomplete. Some products such as immature fish were traded but not recorded. Previous records were not available. No summaries of the data were made. The data was, therefore, only partially reliable.

Comprehensive baseline reconstruction and current data collection, analysis and report were carried out. The survey was designed, carried out and the data analysed in accordance with the Harmonised SOPs for socio-economic research and monitoring.

Field data on primary stakeholders, namely boat and gear owners, crew members, processors and traders have been collected at eight project intervention and two control landing sites. A total of 312 respondents were covered, with an average of 31 for both control and project landing sites.

However, since the study involved extensive recall of baseline data and information dating back four years, this was a challenge to some respondents due to low record

keeping among fishers, coupled with low literacy and numeracy levels among them (Table 4).

2.3 Data analysis and computation of indicators

Data from secondary and field sources were blended where necessary to compute the required indicators. The different sources were also used for triangulation purposes.

Statistical tests were carried out where appropriate, including the Chi-square test for frequencies and the Standard Deviation for means. Results which did not meet the tests were not included in the report.

Missing data were minimized by using multiple sources to fill any data gaps, otherwise means were used.

For purposes of credibility of the results and also to show how subsequent monitoring of the indicators can be replicated, the data types, sources, collection methods,analysis and levels of reliability for the different indicators have been provided as follows:

2.3.1 Household incomes among fish dependent communities indicator

Household incomes were represented by the net revenues from fishing activities of respondents.

The data used to compute the net revenues were production costs, catch data and fish prices, by main species and by landing site.

- Production costs covered costs of boats, oars, labour, gears, floats, sinkers anchors and operational expenses,
- Additional costs for *R. argentea* and *A. nurse/ N. bredoi* included lanterns and paraffin.
- Sources of cost data were the sample survey, key informant interviews with BMU leaders, frame survey reports and records of suppliers of fishing inputs
- Catch data by main species were obtained from sample survey, key nformant interviews and catch assessment survey reports.
- As the current year was still running, CAS data for the previous complete year 2012 was used.
- Fish price data were obtained from the synthesis of sample survey, key nformant interviews and catch assessment survey reports.

Net annual revenues for households were computed as the difference between total annual revenues and total annual costs.

Depreciation on fixed cost items were taken on straight line bias.

The key assumptions used in the calculations were that the 'parachute" and 'barque" boat data were the predominant boat types on Lakes Kyoga and Albert respectively.

Only legal gear and fishing methods were considered in the analysis.

The use of outboard was limited on both lakes and generally considered not to be cost-effective for fishing and most of the outboard engines encountered on the lakes were used for transportation of mixed goods and passengers.

2.3.2 Livelihood indices of households in fish dependent communities indicator

The livelihood indices considered were access to education and health services; health status; alternative livelihood sources; income diversification; food security; expenditure patterns and asset ownership.

The data was obtained from the sample survey, key informant interviews and published sources (UBOS 2010).

Data summaries in counts, percentages and means were computed.

3.2.3 Households that perceived improvements in their livelihoods indicator.

The data used to measure this indicator were the proportions of respondents who considered their livelihoods to have improved since baseline year.

Tha data were obtained from the sample survey.

Data summaries in counts and percentages were computed.

2.3.4 Post harvest losses in the project improved landing sites

Post-harvest economic losses were computed for the different landing sites and fish species using data on volumes of fish catch, proportions of catch sold at reduced prices due to spoilage, normal fish prices and the reduced prices at which spoilt fish was sold. To ensure project definition was complied with, losses and price declines associated with spoilage only were considered. Economic values of losses due to spoilage were chosen in order to allow comparison between losses in different species.

- The average volumes of catch per day by species, from which annual equivalents were computed, were obtained from sample survey and CAS reports.
- Proportions of catch, by fish species, sold at reduced prices were obtained from the sample survey.
- The average prices of good quality fish were obtained from the sample survey and CAS reports.
- Reduced prices at which the spoiled fish was sold were obtained from the sample survey.

Post-harvest economic losses were computed as a product of the data under the above variables.

2.3.5 Volumes of fish marketed from the project improved landing sites

Volumes of fish marketed were captured using records of Fish Movement Permits (FMP) and through recall by BMU leaders, based on number of transport trucks and boats leaving the landing sites per week, their species cargo and tonnage.

Weekly estimates were converted to annual estimates by applying a raising factor of 52.

2.3.6 Proportions of captured fish marketed from the landing sites

This indicator was measured using catch tonnage and marketed tonnage data.

- Fish catch tonnage, by species and by landing site, was obtained from CAS results, BMU"s and DFO's records.
- Fish marketed tonnage by species and by landing site used were computed in **Section 2.3.5** above, based on FMPs and transportation records of BMUs.

2.3.7 Values of fish marketed from the landing sites

The indicator was measured using tonnage of fish marketed and fish prices.

- Tonnage of fish marketed by fish species and by landing site was obtained from **Section 2.3.5** above.
- Prices of fish marketed by species and by landing site were determined through recalls with BMU leaders, individual respondents and from CAS reports.

2.3.8 Fishing population with access to improved and functional infrastructure and facilities

Data on this indicator was generated through interviews under the sample survey and key informant interviews with BMU leaders.

Frequencies were computed for the current status. Percentages were calculated for the comparison between project and control landing sites.

2.3.9 Fishing population with access to markets and market information

The indicator was also assessed using frequencies and percentages of respondents derived from the sample surveys, supplemented with key informant interview information.

2.4 Reporting

Deliverables submitted to DFR and ICEIDA include the following:

i) Study proposal

ii) Study budget

iii) Data collection tools

iv) Programme of work

v) Interim progress report

vi) First draft report

vii) Final report

2.5 Challenges

The challenges encountered during the study were that the frame and catch surveys for Lake Kyoga for 2012 were not carried out. Catch data collected by BMUs were incomplete and were not summarised to give monthly or annual estimates. Fish movement permits were issued mostly for mukene, as coverage of other species was hindered by the presence of immature fish in consignments. Also there were no records of permits other than for the current period. Due to low record keeping among fishers, recall of some of the baseline information was a challenge to the respondents.

The indicators likely to be affected by these limitations are the household incomes, post-harvest losses, volumes and values of fish marketed as they involve computations requiring extensive data.

There was some turnover of respondents at the landing site, estimated at 19.35% and 18.03% for project and control sites respectively (Table 2). However, the new respondents were not required to provide data for baseline reconstruction but only for the current status, so the quality for baseline data was not affected by the in-migrants..

CHAPTER 3:

RECONSTRUCTION OF BASELINE DATA

The chapter provides highlights of the fishing community characteristics as at baseline for the project and control sites. This is followed by results specific to the impact and outcome indicators at baseline. For data types, sources and analysis under each indicator, reference is made to the relevant sections in the Methodology chapter, to avoid the report becoming too repetitive. As stated earlier, there is little comparison between these results and those of the original baseline report, as the focus was different. The report should supplement the original baseline report by providing results on impact and outcome indicators.

3.1 DEMOGRAPHIC CHARACTERISTICS

This section supplements the information on fishing communities on the original baseline report. It provides information on the landing site populations, gender, literacy and numeracy status, education, migrant status, target species and the role of boat owners and fish traders. The data was obtained from the sample survey and key informant interviews, frame survey reports and previous socio-economic surveys.

The results revealed that baseline mean populations per landing site at project and control sites were 3,715 and 2,500 respectively (Table 3).

Males dominated the activities along the fish value chain (84.9%) but there were also significant numbers of women owning boats and doing fish processing. The average age of the adults was 36 years, ranging from 18 to 74.

Concerning literacy levels, project and control landing sites were at different levels at the beginning of the project. The baseline average numbers of respondents able to read vernacular were 4 and 8 at project and control sites respectively (Table 4). In percentages computed out of the average of 31 respondents per landing site, these translate to 12.90% and 24.19% respectively.

Baseline averages able to write numbers were 2 and 4 for project and control sites respectively (Table 4). In percentages out of 31 respondents per landing site, these become 7.26% and 12.90% for project and control sites respectively, computed in a similar way as above. Any descripancies in the prcentages are attributed to rounding up of the figures in Excel.

The average numbers of boys of school going age who were actually in school at baseline were 2.1 and 1.8 at project and control sites respectively. For girls, the baseline averages were 2.1 and 1.5 for project and control sites respectively (Table 5).

Results computed from the sample survey but not tabulated also revealed that some 36.4% of the respondents reported that they had migrated from one landing site to another prior to 2008. The main reason for these movements was the seasonality in fish catch (56.1%).

Similarly, the sample survey results revealed that at baseline, majority of the respondents on Lake Kyoga targeted Tilapia (68.2%), followed by Nile perch (27.3%) while on Lake Albert, the main fish targeted was *Hydrocynus* and *Alestes baremose* (33.3%), followed by *Bracynus nurse* and *Neobola bredoi* (27.8%).

At baseline, the average number of days the respondents operated in a week were 5.1, which translated to 265 days a year for the large species and 183 days for the

small pelagics, namely *R. argentea, B. nurse and N. bredoi*, known locally as mukene, muziri and ragoge respectively. These were fished during half of the days of the month due to moon light effect.

Baseline percentage of boat owners and renters for males and females were 35.48 and 6.45% at project and 33.87% and 4.84% at control sites. Baseline proportions of fish traders were 2.82% and 0.00% at project and 8.06% and 0.00% at control sites respectively. The averages were disaggregated by gender (Table 6). The percentages were computed by dividing the averages by the mean landing site sample of 31 respondents.

IMPACT INDICATORS

3.2 HOUSEHOLD INCOMES AMONG FISH DEPENDENT COMMUNITIES

Percentage increase in household incomes among fishing dependent communities was one of the impact indicators chosen for the project. Income was derived through sale of catch and was determined from total revenues less total costs of the fishing units. Better fish quality through improved handling would attract more buyers to improved landing sites, leading to higher fish prices and, thus, higher revenues for the fishers. Not withstanding, other factors also had impact on fish prices, notably decline in fish catch, growing demand and the general inflation in the economy. A previous study identified the key drivers of profitability to include effectiveness in management of the fish stocks, demand and stability of the market (Odongkara *et al* 2013).

The data types, sources and analysis as well as the limitations for this indicator are given in ***Section 2.3.1*** and ***Section 2.5*** above. In order to disaggregate the net revenues by species, all costs, catches and fish prices were disaggregated by target species of respondent as the independent variable, using the "compare means" function in SPSS. This method was applied in all cases where species specific estimates have been computed from the survey data in this report. The results revealed that the baseline annual net revenues for households for the main fish species at project and control sites respectively in Shs million were as follows: Nile perch (12.9 and 11.7), Tilapia (16.2 and 16.0), Mukene (8.7 and 6.8) and *B. nurse/ N. bredoi (*14.0 and 12.6) (Table 7).

these figures show that at baseline, the incomes were comparable between project and control landing sites, indicating good selection of control sites.

The indicator was derived from both reliable data sources namely the frame surveys and catch assessment surveys as well as the moderately reliable sources, namely the sample survey and records of DFOs and BMUs as explained in Methodology para. 2.2. The estimates for the indicator were, therefore, moderately reliable. Methods for replicating monitoring of this indicator are given in para. 2.3.1. they involve a sample survey of households in fishing communities to generate costs and revenue data by target species. These should be supplemented with data from current FS and CAS reports.

3.2.1 Fish prices during high and low catch months of the year

For purposes of computing annual production and catch, distinction was made between the high and low catch months of the year and average prices were computed from sample survey, CAS and previous socio-economic surveys.

Baseline average fish prices at project and control sites respectively in Shs per kg were as follows: Nile perch (2,619 and 2,744), Tilapia (2,254 and 1,796), mukene (6,500 and 6,000 per basin) and *B. nurse/ N. bredoi (*4,813 and 5,500 per basin) (Table 8).

3.3 LIVELIHOOD INDICES OF HOUSEHOLDS IN FISH DEPENDENT COMMUNITIES

An impact indicator of the project was the percentage increase in livelihood indices of households in fish dependent communities. Apart from household incomes examined above, other important livelihood indices were quality of life, given by education and health achievements, livelihood diversification, food security and wealth accumulation. In order to assess improvements in livelihood indices, therefore, the study examined these parameters within the fishers' households.

The data types, sources and analysis were given in ***Section 2.3.2.*** The main limitation was that of limited ability by respondents to recall information four years ago. Information on the indicator were, therefore, moderately reliable. To replicate this assessment, a sample survey of households in fishing communities should be carried out to generate data on the different livelihood indices.

3.3.1 Access to education and health services

The percentages presented here were computed by dividing the averages in Table 9 by the mean landing site sample of 31 respondents. The results revealed that Primary school facilities were in the proximity of the landing sites at baseline time. Baseline proportions of respondents with access to functional schools at project and control sites were 82.66% and 87.10% respectively (Table 9). Baseline proportions of respondents who made use of the schools at project and control sites were 67.74% and 53.23% respectively.

Health centers were also in the proximity of both the control and project landing sites. Baseline proportions of respondents with access to functional health facilities at project and control sites were 64.11% and 80.65% respectively. Baseline proportions of respondents who made use of the health centres at project and control sites were 61.69% and 72.58% respectively.

Similarly, access to HIV/AIDS information was also good for both the control and the project landing sites. Baseline proportions of respondents with access to functional HIV/AIDS information services at project and control sites were 77.82% and 83.87% respectively. Baseline proportions of respondents who made use of the HIV/AID information services at project and control sites were 74.2% and 83.9% respectively.

3.3.2 Disease prevalence

The common diseases that could be caused by poor sanitation and hygiene were cholera and diarrhea/ dysentery and the prevalence status is provided (Table 10). The proportions were computed by dividing the averages in Table 10 by the average of 31 respondents per landing site.

The results revealed that baseline proportions of respondents who reported infection with cholera at project and control sites were 12.90% and 17.74% respectively.

Baseline proportions of respondents reporting infection with diarrhea/ dysentry were 59.27% and 56.45% respectively.

3.3.3 Alternative livelihood sources

Livelihood diversification is an essential element of sustainable livelihood. In this respect, the baseline results revealed that the main alternative livelihood activities fishers engaged in at project and control sites were: crop farming (50.81% and 33.87%); livestock farming (45.97% and 29.03%); commodity trade (17.74% and 14.52%) respectively (Table 11). The percentages were derived by dividing the averages by 31 respondents per landing site.

3.3.4 Contribution of fisheries to total incomes

Baseline contributions of fisheries to total household incomes at project and control sites, as reported by respondents, were 72.0% and 80.0% respectively (Table 12). The high contributions of fisheries to household incomes reflected the heavy dependence on fisheries by households.

3.3.5 Food security

Indication of food security among the fishing communities was provided by the number of meals eaten by households in a day and the quantities of fish consumed.

Baseline proportions of respondents who ate 3 meals a day were 56.2% and 76.9% for project and control sites respectively (Table 13). Percentages were derived by dividing the averages by 31 as above.

The amounts of fish eaten in kg per household per day were almost the same for both the control and project sites at the baseline (2.5 and 2.2 respectively) (Table 14).

3.3.6 Expenditure patterns of fishers

To provide further insights into the livelihoods of fishers, the study examined the expenditure patterns of fishers. The results showed that baseline expenditures on basic needs at project and controls sites respectively in Shs were: food items (8,685 and 11,337 per day), health (31,345 and 52,235 per month), education (229,218 and 342,738 per term), clothing (104,067 and 169,884 per year) and saving (162,717 and 306,761) (Table 15).

Although some expenditures were higher at control than project sites, incomes were lower and the high expenditures may be attributed to inflation.

3.3.7 Asset ownership

Asset ownership was an important livelihood indicator because certain assets could be used for production while others provided consumptive satisfaction and were indicators of wealth.

Baseline values of the main assets owned by respondents at project and control sites respectively in Shs million were: brick & iron roofed houses (3.27 and 3.81), land (4.73 and 2.19), mobile phones (0.11 and 0.09), radios (0.09 and 0.51) and bicycles (0.12 and 0.21) (Table 16).

3.4 HOUSEHOLDS THAT PERCEIVED IMPROVEMENTS IN THEIR LIVELIHOODS

Percentage increase in households that perceived improvements in their livelihoods was another impact indicator of the project.

No baseline estimates were made as the project was only beginning then but, respondents were able to comment on improvements in their livelihood status at current point as the project was operating.

OUTCOME INDICATORS

3.5 POST HARVEST LOSSES IN THE PROJECT IMPROVED LANDING SITES

Percentage reduction of post harvest losses was an outcome indicator of the project. Post harvest losses have been computed as percentages of total values if loss had not occurred. The data types, sources and analysis for the indicator are given in ***Section 2.3.4*** and the challenges in ***Section 2.5***.

Economic values were used in calculation of post-harvest losses to allow comparison between species and landing sites. To ensure that they reflect reduced fish quality, the questions on quantities and price reductions were specific to fish spoilage.

The estimates were partially reliable as they were based on respondents' perceived proportions of catch affected by spoilage and recalls of reduced prices at which it was sold. No measurements of weights or prices of spoilt fish had been recorded.

The results revealed that baseline post harvest percentage economic losses by species at project and control sites respectively were as follows: Nile perch (-3.8% and -7.4%), Tilapia (-3.67% and -18.0%), Mukene (2.73% and -1.0%) and *B. nurse/ N. bredoi* (-2.1% and -22.4%) (Table 18).

Observations revealed that majority of the respondents had sometimes sold fish at reduced prices due to spoilage (Table 19). However, respondents attributed the spoilage to poor handling of fish as well as other factors like distance of fishing grounds, high temperatures were also important. Spoilage was mainly for light fisheries which did not have proper processing materials at both control and project landing sites.

3.6 VOLUMES OF FISH MARKETED FROM THE PROJECT IMPROVED LANDING SITES

Percentage increase in volume (tonnes) of fish marketed was an outcome indicator of the project. It was anticipated that with improved handling resulting from the use of improved infrastructure, the landing sites would attract more fish buyers to take advantage of reduced post harvest losses, leading to increased proportions of catch sold. This would also attract more fishers even from neighbouring landing sites to market their catch through the improved landing sites.

The data types, sources and analysis for the indicator are given in ***Section 2.3.5*** and the challenges in ***Section 2.5***. The results are moderately reliable as they were computed from fish movement permit records and BMU leaders' recalls of numbers of trucks and boats that transported fish from the landing sites, both sources being only partially reliable.

The results revealed that baseline average volumes of fish marketed at project and control sites respectively in tonnes were 1,935 and 1,846 tonnes (Table 20).

To replicate information on this indicator with higher degree of reliability, a fully fledged market data recording and analysis mechanism should be established under the project and Fisheries Officers and BMUs trained on its use.

3.6.1 Credit and financing of business

Financing methods for the fishing inputs were examined for their influence on fish marketing. Results using data from the sample survey revealed that own savings were the main source of financing for fishing, with limited proportions of respondents obtaining from fish buyers, SACCOs or financial institutions (Table 21). At baseline, proportions of respondents who used own capital at project and control sites were 35.48% and 32.26% respectively. The percentages were computed by dividing the averages by 31 as before.

3.6.2 Booking of fish by traders

Related to funding sources, booking of catch by funders could also affect marketing of the fish. Results based on data from the sample surveys revealed that the proportions of respondents who indicated that their catch were booked at baseline were 51.21% and 50.00% at project and control sites respectively (Table 22). The low booking could be attributed to limited credit offered by traders to fishers for purchase of gear. High fish prices also meant that fishers were able to generate their own funds and avoid credit and booking.

3.7 PROPORTIONS OF CAPTURED FISH MARKETED FROM THE LANDING SITES

Percentage increase in proportion of captured fish marketed was another outcome indicator. Catch data for the study landing sites were obtained from the CAS results of 2007-8 and 2012-13. For Lake Kyoga, where no CAS was done in 2012-13, the gaps were filled with data provided by DFOs and BMUs.

The data types, sources and analysis for the indicator are given in ***Section 2.3.6*** and the challenges in ***Section 2.5***. While the catch data obtained from the CAS were reliable, the volumes of fish marketed were less reliable as explained in para. 3.6, so overall the indicator was moderately reliable.

The results revealed that the baseline mean percentages of catch marketed at project and control sites respectively were 77.0% and 66.8% (Table 23).

To replicate information on the indicator, CAS data and data from improved market data collection and analysis mechanisms proposed in para. 3.6 should be used.

3.8 VALUES OF FISH MARKETED FROM THE LANDING SITES

Percentage increase in values of fish marketed was another indicator. This was determined by the prices at which the marketed fish was sold.

The methodology used in assessing the indicator was described in ***Section 2.3.7***. The data used were from FMP records, BMUs' recalls on transport trucks and boats and respondents recalls on fish prices, all of which were moderately realiable. Information on the indicator was, therefore, moderately reliable.

The results revealed the baseline mean values of marketed fish at project and control landing sites were Shs million 17,118 and 16,054 respectively (Table 25).

To replicate this information, the improved fish market data mechanism proposed in para. 3.6 and current process from CAS should be used.

3.9 FISHING POPULATION WITH ACCESS TO IMPROVED AND FUNCTIONAL INFRASTRUCTURE AND FACILITIES

The outcome indicator measured here was the percent of fishing population in the project focal area with access to improved functional infrastructure and facilities for quality fish handling and marketing. The facilties considered were clean water for fish handling, sanitation facilities, fish handling facilities and fish drying facilities at the landing sites.

The data types, sources and analysis for the indicator are given in ***Section 2.3.7*** and the challenges in ***Section 2.5***. As the sites did not have improved infrastructure and facilities prior to the project, the indicator was reliable.

The results at baseline were not applicable because there were no infrastructures and facilities at the landing sites and that was why they were established by the project (Table 26).. To replicate this information, observations whould be made of the physical availability of the infrastructure and facilities at the landing sites and a sample survey should be carried out to assess their utilization by the communities.

3.10 FISHING POPULATION WITH ACCESS TO MARKETS AND MARKET INFORMATION

Percentage of fishing population with access to markets and market information outcome indicator was measured here. The data types, sources and analysis for the indicator are given in ***Section 2.3.8*** and the challenges in ***Section 2.5***. The information was obtained from the sample survey, whereby recall was a challenge. The results were, therefore, moderately reliable..

To replicate the information, a sample survey should be used to obtain current information.

3.10.1 Access to market

Table 27 gives the respondents who sold on the different market types. The results revealed that at both control and project sites, the majority sold at the beach market. The number of respondents who sold to factory agents was limited, due to the reduced Nile perch and tilapia stocks.

At baseline, proportions of respondents at project and control sites respectively who had access to the different markets were as follows: beach market (65.32% and 69.35%), factory agent/ industrial processors (6.45% and 12.90%), Other local markets (28.63% and 19.35%) and regional market (5.38% and 3.23%). The percentages were computed from the averages divided by the mean of 31 respondents per landing site.

3.10.2 Access to fish buying trucks and fish market information

Access to fish trucks, as a measure to improve market access, was assessed. The data used was from the sample survey. The results showed that baseline proportions of respondents with access to fish buying trucks at project and control sites respectively were 39.52% and 48.39% (Table 28). The percentages were computed out of mean 31 respondents per landing site.

Fish market information was also considered because of its impact on market access. The results revealed that baseline proportions of respondents with access to fish market information at project and control sites respectively were 42.74% and 45.16%.

CHAPTER 4:

CURRENT STATUS

The chapter provides results on the current status of the indicators to enable comparison to be made in the next chapter with the baseline situation to determine the progress of the project in achieving its goals and purpose. The methodologies used, the data types, sources and analysis are described in the methodology chapter, to which reference will be made.

For the current status, respondents did not have to recall data and information over a long period behind as in the baseline reconstruction. The data they provided were, therefore, more accurate. The same was true of recalls by BMU leaders during the Key Informant Interviews. Estimates on the indicators based on the data were, therefore, more reliable for the current status than for the reconstructed baseline.

Subsequent monitoring based on current dta will generate more accurate data than those from baseline reconstruction using distant past recalls.

4.1 DEMOGRAPHIC CHARACTERISTICS

Data sources for this information were the sample survey and key informant interviews, frame survey reports and previous socio-economic surveys. As in Chapter 3, percentages in this chapter were computed from the averages by dividing by the mean of 31 respondents per landing sites.

The results revealed that the current mean populations at project and control sites were 4,879 and 3,600 respectively (Table 3).

Literacy levels at project and control sites were 18.16% and 29.03% respectively of respondents able to read in vernacular (Table 4). Similarly, with respect to numeracy, the percentages of respondents able to write numbers at project and control sites were 11.290% and 14.52% respectively.

The current average numbers of boys of school going age actually in school at project and control sites were 2.4 and 2.1 respectively. For girls, the current averages were 2.3 and 1.9 respectively (Table 5).

The average proportions of boat owners (both males and females) at project and control sites were 58.06% and 51.61% respectively. The average proportions of respondents in the category of fish traders were 9.68% and 19.35% respectively (Table 6).

IMPACT INDICATORS

Although estimates have been derived on impact indicators in this chapter, it should be noted that the time the infrastructure and facilties had been in operation and provided services to the communities was still too short to make judgment about their impacts.

4.2 HOUSEHOLD INCOMES AMONG FISH DEPENDENT COMMUNITIES

Percentage increase in household incomes among fishing dependent communities was one of the impact indicators chosen for the project. Income was derived through sale of catch and was determined by revenues and costs of the fishing units. Better fish quality through improved handling would attract more buyers to improved landing sites, leading to higher fish prices and, thus, higher revenues for the fishers. Not

withstanding, other factors also had impact on fish prices, notably decline in fish catch, growing demand and the general inflation in the economy.

The data types, sources and analysis as well as the limitations for this indicator are given in ***Section 2.3.1*** and ***Section 2.5*** above. The results revealed that the current net revenues for the main species at project and control sites in Shs million were as follows: Nile perch (10.9 and 9.6), Tilapia (13.7 and 12.3), Mukene (24.7 and 21.4) and *B. nurse/ N. bredoi* (23.3 and 18.2) (Table 7).

4.2.1 Fish prices during high and low catch months of the year

Fish prices were obtained during high and low catch season and averaged, for the purpose of computing annual revenues. CAS reports and previous socio-economic surveys were other sources of fish price data.

Current average fish prices for project and control sites in Shs per kg were as follows: Nile perch (4,599 and 4,294), Tilapia (3,109 and 4,415), Mukene, (basin) (17,750 and 11,500) and *B. nurse/ N. bredoi* (basin)12,339 and 10,175) (Table 8).

4.3 LIVELIHOOD INDICES OF HOUSEHOLDS IN FISH DEPENDENT COMMUNITIES

Apart from household incomes examined above, other important livelihood indices examined were quality of life, given by education and health achievements, livelihood diversification, food security and wealth accumulation. In order to assess improvements in livelihood indices, therefore, the study monitored these parameters within the fishers' households.

The data types, sources and analysis are given in ***Section2.3.2.***

4.3.1 Access to education and health services

Primary school facilities were in the proximity of the landing sites at current time. Current proportions of respondents with access to functional schools at project and control sites were 99.19% and 96.77% respectively (Table 9).

Current proportions of respondents who made use of schools at project and control sites were 79.44% and 61.29% respectively.

Health centers were also in the proximity of both the control and project landing sites. Current proportions of respondents with access to functional health facilities at project and control sites were 74.60% and 93.55% respectively.

Current proportions of respondents who made use of the health centres at project and control sites were 72.58% and 83.87% respectively.

Similarly, access to HIV/AIDS information was also good for both the control and the project landing sites in current year. Current proportions of respondents with access to functional HIV/AIDS information services at project and control sites were 91.94% and 93.55% respectively.

Current proportions of respondents who made use of the HIV/AIDS information services at project and control sites were 90.32% and 95.16% respectively.

4.3.2 Disease prevalence

The common diseases attributed to poor sanitation and hygiene were cholera and diarrhea/ dysentery (Table 10).

Current proportions of respondents who reported infection with cholera at project and control sites were 10.48% and 14.52% respectivley.

Current proportions of respondents reporting infection with diarrhea/ dysentry were 66.94% and 62.90% respectively.

4.3.3 Alternative livelihood sources

Livelihood diversification is an essential element of sustainable livelihood. In this respect,respondents who adopted alternative livelihood activities at project and control sites were: crop farming (54.84% and 45.16%); livestock farming (52.02%and 43.55%); commodity trade (18.55% and 19.35%) respectively.

4.3.4 Contribution of fisheries to total incomes

Current contributions of fisheries to total household incomes at project and control sites were 70.3% and 75.5% respectively (Table 12).

4.3.5 Food security

Indications of food security among the fishing communities and how it had changed over the period was provided by the number of meals eaten by household in a day and the quantities of fish consumed.

Current proportions of respondents who ate three meals a day were 59.5% and 75.0% for project and control sites respectively (Table 13).

4.3.6 Amount of fish eaten in a household

At current period, the amounts of fish eaten in kg per household per day was 2.7 and 2.5 for project and control sites respectively (Table 14).

4.3.7 Expenditure patterns of fishers

To provide further insights into the livelihoods of fishers, the study examined the expenditure patterns of fishers.

Current expenditures on basic needs at project and control sites in Shs were as follows: Food items (daily) (15,283 and 14,310), Health care (per month) (61,083 and 76,643), Education (per term) (381,466 and 499,795), Clothing (half yearly) (200,923 and 197,337) and Saving (month) (184,518 and 229,766) (Table 15).

4.3.8 Asset ownership

Asset ownership was an important livelihood indicator because certain assets could be used for production while others provide consumptive satisfaction and are indicators of wealth.

Current values of assets owned by respondents at project and control sites respectively in Shs million were as follows: brick & iron roofed houses (7.17 and 9.34), land (9.6 and 7.09), mobile phones (0.09 and 0.1), radios (0.09 and 0.13) and bicycles (0.14 and 0.14) (Table 16).

4.4 HOUSEHOLDS THAT PERCEIVED IMPROVEMENTS IN THEIR LIVELIHOODS

Percentage increase in households that perceived improvements in their livelihoods was another impact indicator of the project, hence there was need to examine the perception of fishers to household livelihood changes since the establishment of the project in 2008.

The data types, sources and analysis for the indicator are given in ***Section 2.3.3*** and the challenges in ***Section 2.5***. The results showed that the average numbers of respondents who perceived improvements in their livelihoods since the project started at project and control sites were 74.60% and 29.03% respectively (Table 17).

OUTCOME INDICATORS

4.5 POST HARVEST LOSSES IN THE PROJECT IMPROVED LANDING SITES

Percentage reduction of post harvest losses was an outcome indicator of the project. Post harvest economic losses have been computed as percentages of total values if loss had not occurred.

The data types, sources and analysis for the indicator are given in ***Section 2.3.4*** and the challenges in ***Section 2.5***. The results for the current year at project and control sites respectively were as follows: Nile perch (-1.6% and -6.5%), Tilapia (-3.1% and -18.1%), Mukene (-2.03% and -0.8%) and *B. nurse/ N. bredoi* (-0.9% and -12.4%) (Table 18):

Further observations revealed that the respondents had sometimes sold fish at reduced prices due to spoilage (Table 19).

Fish spoilage was also attributed to poor sunshine in the case of mukene, *B. nurse/ N. bredoi.* Seasonal occurrence of maggots due to flies in the months of May, June and July also contributed to spoilage. Fishers of large-sized species attributed their spoilage to delayed landing of catch, scarcity of ice and sometimes limited buyers.

4.6 VOLUMES OF FISH MARKETED FROM THE PROJECT IMPROVED LANDING SITES

Percentage increase in volume (tons) of fish marketed was an outcome indicator of the project. With improved handling resulting from the use of improved infrastructure, the landing sites could attract more fish buyers, leading to increased proportions of catch sold. This would also attract more fishers from neighbouring landing sites to market their catch through the improved landing sites.

The data types, sources and analysis for the indicator are given in ***Section 2.3.5*** and the challenges in ***Section 2.5***. Current average volumes of fish marketed at the landing sites were 1,975 and 1,874 tonnes for project and control respectively (Table 20)..

4.6.1 Credit and financing of business

Currently proportions of respondents who used own capital for project and control sites respectively were 48.4% and 41.9% respectively (Table 21). Other sources were Credit from SACCO (3.2% and 3.2%), Credit from fish buyers (3.2% and 6.4%) and Credit from financial institutions (3.2% and 0.0%).

The study also revealed that the prices of the few respondents who received credit from fish buyers were not mainly determined by the buyers but by the prevailing market conditions.

4.6.2 Booking of fish by traders

Current proportions of respondents who indicated that their catches were booked at project and control sites were 61.69% and 64.52% respectively (Table 22).

4.7 PROPORTIONS OF CAPTURED FISH MARKETED FROM THE LANDING SITES

Percentage increase in proportion of captured fish marketed was another outcome indicator.

The data types, sources and analysis for the indicator are given in ***Section 2.3.6*** and the challenges in ***Section 2.5***. The results revealed that the current mean percentages of catch marketed for project and control sites were 94.02% and 58.85% respectively (Table 23).

4.8 VALUES OF FISH MARKETED FROM THE LANDING SITES

Percentage increase in values of fish marketed was another indicator. This was determined by the prices at which the marketed fish was sold. The methodology used in assessing the indicator was described in ***Section 2.3.7***.

The results revealed the current mean values of marketed fish at project and control landing sites were Shs million 59,532 and 32,536 respectively (Table 25).

4.9 FISHING POPULATION WITH ACCESS TO IMPROVED AND FUNCTIONAL INFRASTRUCTURE AND FACILITIES

The outcome indicator measured here was the percent of fishing population in the project focal area with access to improved functional infrastructure and facilities for quality fish handling and marketing. The data types, sources and analysis for the indicator were given in ***Section 2.3.7*** and the challenges in ***Section 2.5***.

The results revealed that currently, 53.92% and 70.48% of respondents at control and project sites respectively considered the facilities functional and 57.96% and 65.64% at control and project sites respectively made use of them (Table 26).

4.10 FISHING POPULATION WITH ACCESS TO MARKETS AND MARKET INFORMATION

Percent of fishing population with access to markets and market information outcome indicator was measured here. The data types, sources and analysis for the indicator are given in ***Section 2.3.8*** and the challenges in ***Section 2.5***.

4.10.1 Access to fish buying trucks

Access to fish trucks was assessed and results showed that current proportions of respondents with access to fish buying trucks at project and control sites were 64.92% and 72.58% respectively (Table 28).

4.10.2 Access to market information

Access to market information was assessed and it was revealed that currently the proportions of respondents who rated their access to market information as "good" at project and control sites were 62.90% and 70.97% respectively.

4.10.3 Effects of landing site improvement

The benefits that accrued from the development of the landing sites were identified. The main ones included: improved fish handling (43.15% of respondents), increased fish prices (15.32%) and improved community hygiene (7.66%) (Table 29). Other benefits reported were reduction of post-harvest losses due to the use of ice; improved security due to lighting and improved revenues to the BMUs.

4.10.4 Expected benefits for those who did not have facilities

Respondents from the control landing sites also indicated that development of their landing sites could result into high benefits the major ones being: improving standard of living (12.90%), boosting business and development at landing site (11.29%) and improving sanitation (11.29%). Others included improving fish handling and quality and improving fish prices (Table 30).

CHAPTER 5:

COMPARATIVE ANALYSIS OF CURRENT STATUS TO BASELINE-

5.1 DEMOGRAPHIC CHANGES

Populations at the project and control sites changed between baseline and current years by 31.43% and 44.00% respectively (Table 3). However, in absolute terms, there were higher mean populations at project than control sites at both baseline and current years.

Concerning literacy, percentage change of respondents able to read in vernacular at project and control sites were 40.63% and 20.00% respectively (Table 4). Concerning numeracy, the proportional changes in respondents able to write numbers were 55.56% and 12.50% respectively.

These results show more improvements in literacy and numeracy among fishers at project landing sites than at control sites, which would enable them to read messages, compute payments and subtract costs in their business transactions. This is partly attributed to the project training which adopted the functional adult learning (FAL) approach.

Concerning school attendance by children, the percentage change in number of boys of school going age who were actually in school at project and control sites were 16.97% and 13.89% respectively. For girls, the percentage changes were 10.00% and 23.33% respectively. The percentage change for boys was higher at project than control sites. The reverse was true for girls, as their education was affected by other socio-cultural factors.

The respondents in the categories of boat and gear owners increased between baseline and current years at project sites by 36.36% for males and 43.75% for females and at control sites by 33.33% for males and 0.00% for females (Table 6). Similarly, fish traders increased at project sites by 157.14% for males and at control sites by 120.00% for males with no baseline records for the female fish traders. Higher increases of boat owners and fish traders could be attributed to improved business environment provided by the project.

IMPACT INDICATORS

5.2 HOUSEHOLD INCOMES AMONG FISHING DEPENDENT COMMUNITIES

Percentage increase in household incomes among fishing dependent communities was one of the impact indicators chosen for the project.

Between baseline and current years, net revenues of fishing enterprises declined at project and control landing sites for Nile perch and Tilapia, with lower percentage declines at project (-15.25%) than at control (-18.72%) sites. Net revenues rose for mukene and *B. nurse/ N. bredoi* with different percentages as shown in Table 7.

5.2.1 Fish prices during high and low catch months of the year

As stated earlier, fish prices were estimated for purposes of computing annual production values.

Overall, fish prices increased by higher percentage at project sites compared to control sites. The species specific price changes at project and control sites

respectively in Shs were as follows: Nile perch (75.63% and 56.49%), Tilapia (37.93% and 145.85%), Mukene (173.08% and 91.67) and *B. nurse/ N. bredoi* (156.38% and 85.00%) (Table 8).

5.3 LIVELIHOOD INDICES OF HOUSEHOLDS IN FISH DEPENDENT COMMUNITIES

An impact indicator of the project was the percentage increase in livelihood indices of households in fish dependent communities. The relevant parameters have been identified and examined and the changes are presented here.

5.3.1 Access to education and health services

Primary school facility functionality was perceived to have increased between baseline and current years at project and control sites by 20.00% and 11.11% respectively. Utilization by respondents increased by 17.26% and 15.15% respectively (Table 9).

Health center functionality was reported to have increased at project and control sties by 16.35% and 16.00% respectively. Utilistion increased by 17.65% and 15.56% respectively.

With respect to HIV/AIDS information, functionality of the system improved at project and control sties by 18.13% and 11.54% respectively. Proportions of respondents who made use of the services increased by 21.74% and 13.46% respectively.

Generally, improvements in both functionality and usage of the different services were higher at project than at control sites, attributed to improved welfare at the project compared to control sites.

5.3.2 Disease prevalence

The two common diseases caused by poor sanitation and hygiene examined were cholera and diarrhea/ dysentery. Between baseline and current period, the cholera infected respondents at project and control sties declined by -18.75% and -18.18% respectively (Table 10).

Diarrhea/ dysentry infected respondents increased by 12.93% and 11.43% at project and control sties respectively.

Project sties performed a little batter than control sites, attributed mainly to better awareness and facilities at the project sties.

5.3.3 Alternative livelihood sources

Livelihood diversification was an essential element of sustainable livelihood. The main alternative livelihood activities fishers engaged in to supplement fishing were crop and livestock farming and commodity trade.

Between baseline and current years, the percentage changes in respondents involved in alternative livelihood activities at project and control sites respectively were: crop farming (7.94% and 33.33%), livestock farming (13.16% and 50.00%) and commodity trade (4.55% and 33.33%)(Table 11). The proportionate changes were smaller at project than at control sites, and could have been partly due to the fact that fisheries livelihoods ware more stable and gratifying at project than at control sites.

5.3.4 Contribution of fisheries to total incomes

The proportions of incomes from fisheries were high but declining for both the control and project landing sites (Table 12). However, between baseline and current years, they declined at a lower rate at project landing sites (-2.50%) than at the control sites (-5.56%). Stabilization of fisheries incomes at project sites can be attributed to the interventions.

5.3.5 Food security

The number of meals eaten by household in a day and the quantities of fish consumed were chosen as indicators of food security among fisheries households.

Proportion of respondents who had 3 meals a day increased by 3.30% between baseline and current years at project, compared to a decline at control sites where it fell by -1.90%(Table 13). This indication of improvement in livelihood at project sites could be attributed to project interventions.

5.3.6 Amount of fish eaten in a household

Although the amounts of fish eaten in kg per household per day were almost the same for both the control and project sites at baseline (2.5 and 2.2 respectively), the rise at project sites was by a less percentage (7.61%) compared to control sites (15.91%) (Table 14). The slowed rise in fish consumption at the project sites was contributed by the higher marketing of catch due to project interventions.

5.3.7 Expenditure patterns of fishers

Expenditure patterns of fishers were examined to provide further insights into the livelihoods of fishers. The data reveals that between baseline and currently, the percentage increase in expenditures on the items at project and control sties respectively were as follows: **Food items** (75.97% and 26.23%), **Health care** (94.87% and 46.73%), education (66.42% and 45.82%), clothing (93.07% and 16.16%) and saving (13.40% and -25.10%) (Table 15).

The percentage changes were higher at project than at control landing sites. Assuming that inflation rates remained the same at both categories of landing sites, these results show that fishers had more money to spend at project than at control landing sites. Percentage change in savings was also higher at project than at control landing sites.

5.3.8 Asset ownership

Asset ownership was also examined as a livelihood indicator, as certain assets could be used for production while others provided consumptive satisfaction and were indicators of wealth.

Proportionate changes in values of assets owned were as follows: Brick & iron roofed houses (119.71% and 145.01%), Land (102.91% and 223.97), Mobile phones (-18.39% and 5.56%), Radios (-2.74% and -75.49%) and Bicycles (15.00% and -33.33%) (Table 16).

The most valuable assets of houses and land increased more at control than project sites, despite higher incomes at project sites and this could be explained by utilization of incomes earned by communities at the different sites.

5.4 HOUSEHOLDS THAT PERCEIVED IMPROVEMENTS IN THEIR LIVELIHOODS

The study assessed the percentage increase in households that perceived improvements in their livelihoods as an impact indicator of the project. Perceptions of fishers to household livelihood changes between baseline and current years were assessed. The results revealed that the average number of respondents who perceived improvements in their livelihoods at project and control sites were 74.60% and 29.03% respectively (Table 17). Higher proportions of respondents with improved livelihoods at project sites were attributed to the project interventions.

OUTCOME INDICATORS

5.5 POST HARVEST LOSSES IN THE PROJECT IMPROVED LANDING SITES

Percentage reduction of post harvest losses was assessed as an outcome indicator of the project. The results revealed the percentage changes at project and control sites respectively as follows: Nile perch (-57.30% and -12.16%), Tilapia (-15.56% and 0.56%), mukene (-25.61% and -20.00%) and *B. nurse/ N. bredoi* (-59.52% and -44.64%) (Table 18).

These results revealed that the declines in post harvest losses between baseline and current years were greater at project than at control sites and this could partly be attributed to the project interventions.

The results also showed that the proportions of respondents experiencing different effects of spoilage declined more at project than at control sites, attributed to improved facilities and training (Table 19).

5.6 VOLUMES OF FISH MARKETED FROM THE PROJECT IMPROVED LANDING SITES

Percentage increase in volume (tons) of fish marketed as an outcome indicator of the project was assessed. The results showed that the percentage changes in volume between baseline and current years at project and control sites were 2.05% and 1.54% respectively (Table 20), depicting a higher percentage change in volume of fish marketed at project than control sites, attributed to infrastructure improvements.

5.6.1 Credit and financing of business

Results on the percentage change between baseline and current years for project and control sites respectively were as follows: own capital (36.36% and 30.00%), credit from SACCO (100.00% and 0.00%), credit from fish buyers (00.00% and -3.33%) and credit from financial institutions (0.00% and 0.00%) (Table 21).

5.6.2 Booking of fish by traders

Proportional changes in respondents who indicated that their catch were booked between baseline and current years at project and control sites were 20.47% and 29.03% respectively (Table 22).

The booking could be attributed to credit offered by traders to fishers for purchase of gear but the higher prices of fish could have been responsible for the reduction in booking patterns at project sites as fishers needed less credit and hence less booking.

5.7 PROPORTIONS OF CAPTURED FISH MARKETED FROM THE LANDING SITES

Percentage increase in proportion of captured fish marketed as an outcome indicator was assessed. The results revealed that between the baseline and current years, percentage changes of catch marketed at project and control sites were 17.04%and -8.00% respectively (Table 23). The better performance at project sites was attributed to the project interventions.

5.8 VALUES OF FISH MARKETED FROM THE LANDING SITES

Percentage increase in values of fish marketed was assessed as an outcome indicator. The results revealed that although the values of fish marketed were comparable during current year, the percentage rise between baseline and current years at project and control sites were 247.78% and 102.67% respectively (Table 25).

5.9 FISHING POPULATION WITH ACCESS TO IMPROVED AND FUNCTIONAL INFRASTRUCTURE AND FACILITIES

The percent of fishing population with access to improved and functional infrastructure and facilities for quality fish handling and marketing was assessed as an outcome indicator.

Between project and control sites, percentage differences for functionality of facilities was 16.56%. For usage, the percentage difference was 7.68% (Table 26).

The facilities with highest percentage difference in functionality between project and control sites was fish handling facilities (34.20%) and its usage percentage difference was 21.20%

Generally, less usage of facilities were reported than functionality because of the technical challenges experienced with some of the facilities.

Although some facilities and services were reported to be at the control sites and used by respondents, their quality was low and could not be compared to those at the project sites.

5.10 FISHING POPULATION WITH ACCESS TO MARKETS AND MARKET INFORMATION

Percent of fishing population with access to markets and market information outcome indicator was examined.

5.10.1 Access to market outlets

While beach markets remained the main market outlet for most respondents over the period, access to factory agents and industrial processors declined due to declining catches of Nile perch and tilapia while access to regional markets increased as a result of increased catch of *B. nurse/ N. bredoi*

5.10.2 Access to fish buying trucks

Access to fish trucks was assessed and results showed that the proportional change in respondents reporting good access to trucks between baseline and current years at control and project sites were 64.29% and 50.00% respectively (Table 28).

5.10.3 Access to market information

Access to market information was assessed and it was revealed that the level of access to market information had risen between baseline and current period at project and control sites. The percentage increase in respondents who rated their market information as being "good" at project and control sites were 47.17% and 57.14% respectively (Table 28). The project needs to do more to facilitate the flow of market information between the project sites and the outside markets.

5.10.4 Effects of landing site improvement

The benefits that accrued from the development of the landing sites were identified. The main ones included: improved fish handling, increased fish prices and improved community hygiene (Table 29). Other benefits reported were reduction of post-harvest losses due to the use of ice; improved security due to lighting and improved revenues to the BMUs.

CHAPTER 6:

CONCLUSIONS AND RECOMMENDATIONS

The study reconstructed the baseline data on the impact and outcome indicators as provided under the logframe and results framework of QAFMP. The corresponding current data have also been collected and analysed. Comparative analysis of current to baseline reconstructed results has been carried out.

Reconstructon of baseline has been made possible through the use of available reports of previous studies, namely FS, CAS and socio-economic surveys and records of BMUs and DFOs. Field data conducted through a sample survey and key informant interviews provided invaluable information. However, challenges were identified with the secondary as well as primary data, which affected their accuracy and reliability of the indicators computed from them.. A reconstruction study has its limitations that it cannot generate same quality data as a real time study and any information which had not been recorded or could be not be recalled would not be available to the project. Reconstructed baseline estimates of some of the indicators were, therefore, moderately reliable, as indicated under each indicator in the report. The problem of recall was much less with the current status data because of the short time horizon involved. The current estimates for the indicators, especially those derived from the sample survey and Key Informant Interviews, were, therefore, more reliable than those for the baseline reconstruction.

Estimates of the impact, and to some extent outcome indicators, have been assessed rather too early in the project cycle, as the infrastructures had only been used for a few months after launch. It is necessary to give sufficient time for target beneficiaries to adopt and make use of the infrastructure before impact can be measured and this is usually done well after completion of the project. The same applies to the outcome indicators. This should be born in mind in assessing the estimates of the indicators provided in this report.

Instructions have been given in the report on how to replicate each indicator during subsequent monitoring and evaluation. Primarily, this will require key informant interviews with DFOs and BMU leaders to obtain information on the landing sites, supplemented with FS and CAS results on the landing sites. A comprehensive sample survey of fishers should be conducted to obtain data on the operations and perceptions of the fishing communities.

The lesson for future projects is, therefore, to get the logframe right from the beginning of the project so that the baseline study can provide the necessary measurements for the different impact and outcome indicators. Furthermore, data collection mechanisms should be built into the project to ensure that the information necessary evaluations are generated. As this has not been the case, there is need to consider improving fish marketing data through awareness, design of suitable data collection mechanisms and training for DFR, DFOs and BMUs. Impact indicators whould be assessed well after completion of project, to allow for adoption and utilization of the facilities by the beneficiary communities.

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TABLES

Table 1: Baseline characteristics of the selected control and project improved landing sites

	District	Boats	Gillnets	Fishers	Catch (tonnes)	Value (Shs mill)
Control sites						
Sebagoro	Hoima	199	576	367	3,975.5	1,719.6
Kawongo	Kayunga	153	1,695	405	700.6	778.6
Mean		**176**	1,136	**386**	**2,338.0**	**1,249**
Project sites						
Iyingo	Buyende	117	1,654	210	497.1	586.7
Mugarama	Serere	83	1,906	175	451.0	521.6
Bangladesh	Amolatar	107	1,752	117	423.6	443.6
Kayei	Apac	61	636	123	363.7	274
Panyimur	Nebbi	101	1,868	257	3,041.3	696.2
Wanseko	Buliisa	220	688	28	5,485.5	1,378.7
Kaiso	Hoima	208	3,743	554	2,490.4	2,225.3
Ntoroko	Ntoroko	218	4,288	361	6,116.3	806.4
Mean		**139**	2,067	**228**	**2,358.6**	**867**

Sources: Taabu-Munyaho et al 2012; Mbabazi et al 2012

Table 2: Change in fishing population between baseline and currently

	No. of Respondents at site at baseline	No. of Respondents who came after baseline	Total respondents	Percentage that came after 2008
Control sites				
Sebagoro	27	5	33	15.15%
Kawongo	22	6	28	21.43%
Average	**25**	**6**	**31**	**18.03%**
Project sites				
Iyingo	21	3	24	12.50%
Mugarama	21	12	34	35.29%
Bangladesh	23	11	36	30.56%
Kayei	30	2	32	6.25%
Kaiso	22	4	27	14.81%
Wanseko	27	4	34	11.76%
Panyimur	26	0	28	
Ntoroko	26	9	36	25.00%
Average	**25**	**6**	**31**	19.35%

Source: Survey data

Table 3: Population of landing sites

Control site	Baseline	Current	Percentage change
Sebagoro	3,500	5,200	48.57%
Kawongo	1,500	2,000	33.33%
Average	**2,500**	**3,600**	**44.00%**
Project sites			
Iyingo	800	600	-25.00%
Mugarama	1,670	2,000	19.76%
Bangladesh	1,650	1,450	-12.12%
Kayei	3,500	2,671	-23.69%
Kaiso	5,000	10,000	100.00%
Wanseko	8,400	10,000	19.05%
Panyimur	2,500	4,000	60.00%
Ntoroko	6,200	8,314	34.10%
Average	**3,715**	**4,879**	**31.34%**

Source: Survey data

Table 4: Literacy and numeracy levels of respondents by landing site

	No. able to read in vernacular		No. able to write numbers	
	Baseline	**Current**	**Baseline**	**Current**
Control sites				
Sebagoro	10	11	3	4
Kawongo	5	7	5	5
Average	**8**	**9**	**4**	**5**
Percent[1]	**24.19%**	**29.03%**	**12.90%**	**14.52%**
Project sites				
Iyingo	2	3	2	3
Mugarama	3	5	1	1
Bangladesh	2	4	1	3
Kayei	3	5	1	2
Kaiso	2	2	1	2
Wanseko	6	7	1	3
Panyimur	8	8	3	3
Ntoroko	6	11	8	11
Average	**4**	**6**	**2**	**4**
Percent[1]	**12.90%**	**18.15%**	**7.26%**	**11.29%**
Percentage change				
Control sites		20.00%		12.50%
Project sites		40.63%		55.56%

Source: Survey data

Table 5: Average number of school going children of 6-18 years in households by landing site

	Boys		Girls	
	Baseline	**Current**	**Baseline**	**Current**
Control sites				
Sebagoro	1.9	2.2	1.7	2.2
Kawongo	1.7	1.9	1.3	1.5
Average	**1.8**	**2.1**	**1.5**	**1.9**
Project sites				
Iyingo	2.2	2.7	2.7	3.7
Mugarama	1.9	2.0	2.4	2.7
Bangladesh	2.0	2.7	1.9	2.0
Kayei	1.6	2.1	1.8	2.0
Kaiso	3.3	2.9	1.9	2.0
Wanseko	1.4	1.8	2.2	2.1
Panyimur	2.1	2.8	1.8	2.1
Ntoroko	2.0	2.3	2.3	2.1
Average	**2.1**	**2.4**	**2.1**	**2.3**
Percentage change				
Control sites		13.89%		23.33%
Project sites		16.97%		10.00%

Source: Survey data

Table6: Numbers of boat owners and traders among fishing communities

	Boat owner/ Renter				Fish trader			
	Baseline		Current		Baseline		Current	
	Males	Females	Males	Females	Males	Females	Males	Females
Control sites								
Sebagoro	14	3	15	3	4	--	8	0
Kawongo	7	0	13	0	1	--	3	1
Average	**10.5**	**2**	**14**	**2**	**3**		**6**	**1**
Percent[1]	**33.87%**	**4.84%**	**45.16 %**	**4.84%**	**8.06%**	**0.00%**	**17.74%**	**1.61%**
Project sites								
Iyingo	10	1	11	1	0	--	0	0
Mugarama	7	2	10	2	1	--	2	2
Bangladesh	13	2	18	3	2	--	7	0
Kayei	11	1	14	2	0	--	2	2
Kaiso	12	3	13	3	0	--	1	1
Wanseko	9	2	15	4	1	--	1	0
Panyimur	12	4	13	6	0	--	0	2
Ntoroko	10	0	26	2	3	--	5	0
Average	**11.0**	**2**	**15**	**3**	**1**	**--**	**2**	**1**
Percent[1]	35.48%	6.45%	48.39%	9.27%	2.82%	0.00%	7.26%	3.23%
Percentage change								
Control sites			33.33 %	0.00%			120.00%	--
Project sites			36.36 %	43.75%			157.14%	--

Source: Survey data

Table 7: Average annual household net revenues by main species (Shs million)

	Nile perch		Tilapia		Mukene		*B. nurse/ N. bredoi*	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites								
Sebagoro	12.2	9.2	14.9	10.8			12.6	18.2
Kawongo	11.3	9.9	17.0	13.9	6.8	21.4		
Average	**11.7**	**9.6**	**16.0**	**12.3**	**6.8**	**21.4**	**12.6**	**18.2**
Project sites								
Iyingo	15.4	11.7	23.0	19.3	4.1	16.4		
Mugarama	10.0	9.7	19.6	18.1	8.5	24.6		
Bangladesh	14.9	10.7	14.9	12.0	12.7	31.4		
Kayei	11.1	9.5	9.4	7.7	9.6	26.4		
Kaiso*	12.6		15.8					
Wanseko	5.5	4.4	18.3	12.5			12.5	20.6
Panyimur*	11.3		14.3					
Ntoroko	22.4	19.6	14.5	12.9			15.5	26.1
Average	**12.9**	**10.9**	**16.2**	**13.7**	**8.7**	**24.7**	**14.0**	**23.3**
Percentage change								
Control sites		-18.72%		-22.57%		214.71%		44.44%
Project sites		-15.25%		-15.25%		183.09%		66.79%

Source: Survey data; NaFIRRI 2009, Taabu-Munyaho et al 2012, Mbabazi et al 2012
**Infrastructure at these landing sites not yet functional*
For years of data, see ***Section 2.3.1***

Table 8: Average selling prices by main species for high and low catch seasons (Shs/unit)

	Nile perch (kg)		**Tilapia** (kg)		**Mukene**(basin)		***B. nurse/ N. bredoi***(basin)	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites								
Sebagoro	1,200	2,400	1,000	4,125			5,500	10,175
Kawongo	4,288	6,188	2,592	4,706	6,000	11,500		
Average	**2,744**	**4,294**	**1,796**	**4,415**	**6,000**	**11,500**	**5,500**	**10,175**
Project sites								
Iyingo	2,500	4,156	1,812	2,956	3,000	15,000	--	--
Mugarama	2,563	3,308	1,708	2,600	10,000	20,000	--	--
Bangladesh	2,167	5,250	3,117	2,963	5,000	17,000	--	--
Kayei	2,140	3,464	3,000	3,349	8,000	19,000	--	--
Kaiso*	3,083	--	2,167	--	--	--	5,000	--
Wanseko	2,450	4,750	2,050	3,300	--	--	5,438	9,677
Panyimur*	2,063	--	2,150	--	--	--	--	--
Ntoroko	3,983	6,667	2,025	3,483	--	--	4,000	15,000
Average	**2,619**	**4,599**	**2,254**	**3,109**	**6,500**	**17,750**	**4,813**	**12,339**
Percentage change								
Control sites		56.49%		145.85%		91.67%		85.00%
Project sites		75.63%		37.93%		173.08%		156.38%

Source: Survey data, NaFIRRI 2009, Mbabazi et al 2012

**Infrastructure at these landing sites not yet functiona*

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Table 9: Average number of respondents with perceptions on social facilities and services

	Primary school				Health centre				HIV/AIDS services			
	Functionality		Usage		Functionality		Usage		Functionality		Usage	
	Baseline	Current	Baseline	Current	Baseline	Current	Baseline	Current	Baseline	Current	Baseline	Current
Control sites												
Sebagoro	31	32	22	23	29	31	29	29	30	31	29	31
Kawongo	23	28	11	15	21	27	16	23	22	27	23	28
Average	**27**	**30**	**17**	**19**	**25**	**29**	**23**	**26**	**26**	**29**	**26**	**30**
Percent[1]	**87.10%**	**96.77%**	**53.23%**	**61.29%**	**80.65%**	**93.55%**	**72.58%**	**83.87%**	**83.87%**	**93.55%**	**83.87%**	**95.16%**
Project sites												
Iyingo	21	23	19	22	11	12	11	12	17	20	16	19
Mugarama	20	32	16	24	17	24	16	23	18	26	17	25
Bangladesh	26	36	17	19	18	25	18	24	26	34	25	34
Kayei	29	31	22	23	28	29	28	29	29	32	29	32
Kaiso	23	27	17	22	6	10	6	10	21	26	21	26
Wanseko	31	34	27	29	23	26	22	24	29	32	25	32
Panyimur	28	28	25	26	28	28	27	27	26	26	25	24
Ntoroko	27	35	25	32	28	31	25	31	27	32	26	32
Average	**26**	**31**	**21**	**25**	**20**	**23**	**19**	**23**	**24**	**29**	**23**	**28**
Percent[1]	**82.66%**	**99.19%**	**67.74%**	**79.44%**	**64.11%**	**74.60%**	**61.69%**	**72.58%**	**77.82%**	**91.94%**	**74.19%**	**90.32%**
Percentage change												
Control sites		11.11%		15.15%		16.00%		15.56%		11.54%		13.46%
Project sites		20.00%		17.26%		16.35%		17.65%		18.13%		21.74%

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 10: Respondents who reported disease infections by landing site

	Cholera		Diarrhea/dysentry	
	Baseline	**Current**	**Baseline**	**Current**
Control sites				
Sebagoro	7	7	18	17
Kawongo	4	2	17	22
Average	**6**	**5**	**18**	**20**
Percent[1]	**17.74%**	**14.52%**	**56.45%**	**62.90%**
Projectsites				
Iyingo	1	1	18	13
Mugarama	0	0	22	26
Bangladesh	4	3	16	21
Kayei	4	3	19	19
Kaiso	6	4	12	16
Wanseko	6	5	26	29
Panyimur	7	6	19	20
Ntoroko	4	4	15	22
Average	**4**	**3**	**18**	**21**
Percent[1]	**12.90%**	**10.48%**	**59.27%**	**66.94%**
Percentage change				
Control sites		-18.18%		11.43%
Project sites		-18.75%		12.93%

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 11: Respondents engaged in alternative livelihood activities

	Crop farming		Livestock farming		Commodity trade	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites						
Sebagoro	8	11	7	10	3	3
Kawongo	13	17	11	17	6	9
Average	**11**	**14**	**9**	**14**	**5**	**6**
Percent[1]	**33.87%**	**45.16%**	**29.03%**	**43.55%**	**14.52%**	**19.35%**
Project sites						
Iyingo	18	19	16	16	7	7
Mugarama	24	28	16	23	1	3
Bangladesh	15	19	13	17	5	7
Kayei	12	10	13	12	7	4
Kaiso	8	9	9	11	5	5
Wanseko	20	24	18	22	7	5
Panyimur	22	21	19	18	6	7
Ntoroko	7	6	10	10	6	8
Average	**16**	**17**	**14**	**16**	**6**	**6**
Percent[1]	**50.81%**	**54.84%**	**45.97%**	**52.02%**	**17.74%**	**18.55%**
Percentage change						
Control sites		33.33%		50.00%		33.33%
Project sites		7.94%		13.16%		4.55%

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 12: Contribution of fisheries to total incomes

	Baseline	Current
Control sites		
Sebagoro	87.9%	80.2%
Kawongo	72.1%	70.9%
Average	**80.0%**	**75.5%**
Project sties		
Iyingo	61.4%	55.8%
Mugarama	66.1%	59.6%
Bangladesh	78.3%	77.9%
Kayei	62.0%	74.2%
Kaiso	79.1%	78.1%
Wanseko	74.1%	67.2%
Panyimur	72.7%	72.1%
Ntoroko	81.9%	76.9%
Average	**72.0%**	**70.2%**
Percentage change		
Control sites		-5.56%
Project sites		-2.40%

Source: Survey data

N.B. Values for fisheries incomes are given in Table 7 but recalls of incomes from other sources were considered too demanding on respondents, so they were only asked for proportional contributions of the sources to household incomes.

Table 13: Respondents who have eaten the different number of meals per day

	Baseline		Current		Percentage change	
No. of meals	**Control**	**Project**	**Control**	**Project**	**Control**	**Project**
1	0.0%	1.3%	0.0%	2.0%	--	0.70%
2	23.1%	38.5%	25.0%	35.2%	1.90%	-3.30%
3	76.9%	56.2%	75.0%	59.5%	-1.90%	3.30%
More than 3	0.0%	3.9%	0.0%	3.2%	--	-0.70%

Source: Survey data

Table 14: Average quantities of fish consumed in household per day (kg)

	Baseline	Current
Control sites		
Sebagoro	2.3	3.1
Kawongo	2.1	2.0
Average	**2.2**	**2.5**
Project sites		
Iyingo	2.2	2.0
Mugarama	1.9	2.1
Bangladesh	2.2	2.2
Kayei	2.1	2.7
Kaiso	2.9	3.0
Wanseko	3.1	3.3
Panyimur	2.8	2.8
Ntoroko	2.5	3.1
Average	**2.5**	**2.7**
Percentage change		
Control sites		15.91%
Project sites		7.61%

Source: Survey data

Table 15: Average expenditures on selected items (Shs)

	Food items (daily)		**Health care** (per month)		**Education** (per term)		**Clothing** (half yearly)		**Saving** (month)	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites										
Sebagoro	10,696	15,906	55,069	97,321	258,333	463,000	115,357	197,500	386,522	290,156
Kawongo	11,977	12,714	49,400	55,964	427,143	536,591	224,412	197,174	227,000	169,375
Average	**11,337**	**14,310**	**52,235**	**76,643**	**342,738**	**499,795**	**169,884**	**197,337**	**306,761**	**229,766**
Project sites										
Iyingo	5,543	9,354	27,545	53,917	172,308	276,905	90,045	177,826	107,667	146,667
Mugarama	8,250	16,606	21,417	88,774	241,875	361,133	98,800	227,636	104,818	122,903
Bangladesh	11,280	13,028	28,720	46,236	385,263	653,371	127,600	233,611	353,864	250,156
Kayei	5,683	11,839	31,071	40,355	284,739	589,867	88,750	166,333	150,870	191,200
Kaiso	7,720	20,852	35,542	55,389	215,231	280,441	109,600	201,296	148,500	172,409
Wanseko	7,448	13,303	48,231	84,818	254,400	298,182	101,250	200,758	111,533	112,000
Panyimur	8,196	12,765	20,485	41,257	108,450	189,923	126,357	207,500	124,773	223,625
Ntoroko	15,357	24,514	37,750	77,919	171,480	401,903	90,130	192,424	199,708	257,188
Average	**8,685**	**15,283**	**31,345**	**61,083**	**229,218**	**381,466**	**104,067**	**200,923**	**162,717**	**184,518**
Percentage change										
Control sites		26.23%		46.73%		45.82%		16.16%		-25.10%
Project sites		75.97%		94.87%		66.42%		93.07%		13.40%

Source: Survey data

Table 16: Average value of assets owned by respondents by landing site (Shs mill.)

	Brick & iron roofed houses		Land		Mobile phones		Radios		Bicycles	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites										
Sebagoro	3.74	4.34	1.07	8.85	0.08	0.08	0.06	0.12	0.08	0.10
Kawongo	3.88	14.33	3.31	5.34	0.10	0.11	0.96	0.13	0.34	0.18
Average	**3.81**	**9.34**	**2.19**	**7.09**	**0.09**	**0.10**	**0.51**	**0.13**	**0.21**	**0.14**
Project sites										
Iyingo	3.35	7.25	5.35	6.11	0.09	0.08	0.08	0.07	0.17	0.19
Mugarama	3.00	8.43	6.55	11.74	0.20	0.07	0.08	0.14	0.14	0.15
Bangladesh	2.67	11.97	6.99	14.25	0.14	0.11	0.12	0.12	0.10	0.14
Kayei	0.73	2.63	0.87	2.65	0.04	0.08	0.23	0.1	0.08	0.12
Kaiso	4.38	5.37	5.76	8.72	0.11	0.09	0.05	0.1	0.09	0.14
Wanseko	2.00	4.56	9.34	20.20	0.10	0.10	0.04	0.04	0.12	0.15
Panyimur	0.00	11.50	2.33	5.63	0.11	0.08	0.08	0.08	0.17	0.14
Ntoroko	10.00	5.70	0.65	7.48	0.08	0.10	0.05	0.06	0.13	0.12
Average	**3.27**	**7.17**	**4.73**	**9.60**	**0.11**	**0.09**	**0.09**	**0.09**	**0.12**	**0.14**
Percentage change										
Control sites		145.01%		223.97%		5.56%		-75.49%		-33.33%
Project sites		119.71%		102.91%		-18.39%		-2.74%		15.00%

Source: Survey data

Table 17: Respondents who perceived that their household livelihoods had improved, 2013

Control sites	**No.**
Sebagoro	12
Kawongo	6
Average	**9**
Percent[1]	**29.03%**
Project sites	
Iyingo	21
Mugarama	25
Bangladesh	24
Kayei	21
Kaiso	16
Wanseko	25
Panyimur	24
Ntoroko	29
Average	**23**
Percent[1]	**74.60%**

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 18: Post-harvest losses for the main fish species by landing site

	Nile perch		Tilapia		Mukene		*B. nurse/ N. bredoi*	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites								
Sebagoro			-8.0%	-3.2%			-22.4%	-12.4%
Kawongo	-7.4%	-6.5%	-28.0%	-33.0%	-1.0%	-0.8%		
Average	**-7.4%**	**-6.5%**	**-18.0%**	**-18.1%**	**-1.0%**	**-0.8%**	**-22.4%**	**-12.4%**
Project sites								
Iyingo	-1.3%	-0.5%	-3.6%	-1.3%	-5.4%	-3.0%	--	--
Mugarama	-9.0%	-2.4%	3.3%	-2.6%	--	--	--	--
Bangladesh	-3.9%	-1.2%	0.0%	-1.7%	-2.8%	-3.1%	--	--
Kayei	-1.7%	-0.1%	-7.5%	-2.7%	0.0%	0.0%	--	--
Kaiso*	-4.6%	--	-9.3%	--	--	--	-0.7%	-0.2%
Wanseko	-4.2%	-3.5%	-7.0%	-7.2%	--	--	-3.5%	-1.5%
Panyimur*	-1.7%	--	-1.6%	--	--	--	--	--
Ntoroko	-4.2%	-2.1%	-3.1%	-3.1%	--	--	--	--
Average	**-3.83%**	**-1.63%**	**-3.67%**	**-3.10%**	**-2.73%**	**-2.03%**	**-2.10%**	**-0.85%**
Percentage change								
Control sites		-12.16%		0.56%		-20.00%		-44.64%
Project sites		-57.30%		-15.56%		-25.61%		-59.52%

Source: Survey data; NaFIRRI 2009, Taabu-Munyaho et al 2012, Mbabazi et al 2012
**Infrastructure at these landing sites not yet functional*

Table 19: Respondents' experiences with post harvest losses

	Baseline		Current		Percentage change	
	Control	**Project**	**Control**	**Project**	**Control**	**Project**
Respondents who sometimes sold fish at reduced prices	65.4%	86.5%	50.0%	72.7%	-15.40%	-13.80%
Respondents who experienced spoilage in fish	18.7%	25.0%	20.1%	20.0%	1.40%	-5.00%
Respondents who attributed spoilage to poor handling	6.3%	28.1%	4.5%	19.8%	-1.80%	-8.30%
Respondents who threw away spoiled fish that could not be eaten	24.1%	50.0%	28.3%	29.4%	4.20%	-20.60%

Source: Survey data

Table 20: Volumes of fish marketed from the landing sites (tonnes)

	Baseline					Current					Percentage change
	Nile perch	**Tilapia**	**Mukene**	***B. nurse/ N. bredoi***	**Total**	**Nile perch**	**Tilapia**	**Mukene**	***B. nurse/ N. bredoi***	**Total**	
Control sites											
Sebagoro	318	477	--	2,385	3,180	161	482	--	2,568	3,210	0.90%
Kawongo	51	77	383		511	27	81	430		538	5.30%
Average	**185**	**277**	**383**	**2,385**	**1,846**	**94**	**281**	**430**	**2,568**	**1,874**	**1.54%**
Project sites											
Iyingo	39	58	292	--	389	23	69	366	--	458	17.74%
Mugarama	33	49	245	--	327	21	63	336	--	420	28.44%
Bangladesh	31	46	231	--	308	21	62	330	--	412	33.77%
Kayei	28	42	209	--	278	15	44	234	--	292	5.04%
Panyimur*	184	276	--	1,379	1,839	--	--	--	--	--	--
Wanseko	497	746	--	3,728	4,970	215	646	--	3,446	4,307	-13.34%
Kaiso*	203	305	--	1,523	2,031	--	--	--	--	--	--
Ntoroko	534	800	--	4,002	5,336	298	894	--	4,766	5,958	11.66%
Average	**193**	**290**	**244**	**2,658**	**1,935**	**99**	**296**	**316**	**4,106**	**1,975**	**2.05%**

Source: Survey data; NaFIRRI 2009, Mbabazi et al 2012

**Infrastructure at these landing sites not yet functional*

Table 21: Main source of capital for financing boats and gears

	Own capital		Credit from SACCO		Credit from fish buyers		Credit from financial institutions	
	Baseline	**Current**	**Baseline**	**Current**	**Baseline**	**Current**	**Baseline**	**Current**
Control sites								
Sebagoro	9	12	1	1	5	4	0	0
Kawongo	11	14	0	0	0	0	0	0
Average	**10**	**13**	**1**	**1**	**3**	**2**	**0**	**0**
Percent[1]	**32.26%**	**41.94%**	**3.23%**	**3.23%**	**9.68%**	**6.45%**	**0.00%**	**0.00%**
Project sites								
Iyingo	8	8	0	1	1	1	1	2
Mugarama	4	12	2	2	0	0	2	2
Bangladesh	12	15	0	0	0	0	1	2
Kayei	9	11	0	0	0	0	2	2
Kaiso	11	14	0	0	1	2	0	0
Wanseko	11	15	1	2	0	1	2	1
Panyimur	15	18	0	1	1	0	0	0
Ntoroko	19	25	0	0	1	2	1	1
Average	**11**	**15**	**0**	**1**	**1**	**1**	**1**	**1**
Percent[1]	**35.48%**	**48.39%**	**0.00%**	**3.23%**	**3.23%**	**3.23%**	**3.23%**	**3.23%**
Percentage change								
Control sites		30.00%		0.00%		-33.33%		--
Project sites		36.36%		100.00%		0.00%		0.00%

Source: Survey data

Table 22: Respondents for whom traders booked fish

	Baseline	Current
Control sites		
Sebagoro	18	23
Kawongo	13	17
Average	**16**	**20**
Percent[1]	**50.00%**	**64.52%**
Project sites		
Iyingo	13	15
Mugarama	17	22
Bangladesh	18	25
Kayei	16	17
Kaiso	16	16
Wanseko	25	28
Panyimur	13	14
Ntoroko	9	16
Average	**16**	**19**
Percent[1]	**51.21%**	**61.69%**
Percentage change		
Control sites		29.03%
Project sites		20.47%

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 23: Annual fish catches by species (tonnes)

	Baseline						Current					
	N. perch	Tilapia	Mukene	*B.nurse/ N.bredoi*	Others	Total	N. perch	Tilapia	Mukene	*B.nurse/ N.bredo*	Others	Total
Control sites												
Sebagoro	451.7	49.6		4,459.0	270.9	**5,231.2**	137.4	15.3	-	5,449.0	215.6	**5,817.3**
Kawongo	94.0	425.0	181.6			**700.6**	81.0	453.0	326.6			**860.6**
Average	**272.9**	**237.3**	**181.6**	**4,459.0**	**270.9**	**2,965.9**	**109.2**	**234.2**	**326.6**	**5,449.0**	**215.6**	**3,339.0**
Project sites												
Iyingo	71.4	332.1	93.6			**497.1**	54.0	413.0	89.0			**556.0**
Mugarama	76.7	273.5	100.8			**451.0**	45.0	312.0	120.0			**477.0**
Bangladesh	55.0	231.3	137.3			**423.6**	53.0	314.0	137.3			**504.3**
Kayei	40.8	95.3	225.3			**361.4**	38.0	102.0	225.3			**365.3**
Panyimur	94.1	38.2		2,766.6	142.4	**3,041.3**	34.1	3.9	-	387.1		**425.1**
Wanseko	302.4	139.1		5,985.5	268.6	**6,695.6**	23.9	68.1	-	2,865.3		**2,957.3**
Kaiso	1,456.8	159.9			873.7	**2,490.4**	348.0	38.8	-		545.8	**932.6**
Ntoroko	243.1	170.7		5,217.6	484.9	**6,116.3**	11.6	522.6	-	5,470.6	681.0	**6,685.8**
Average	**292.5**	**180.0**	**139.3**	**4,656.6**	**442.4**	**2,509.6**	**76.0**	**221.8**	**142.9**	**2,907.7**	**613.4**	**1,612.9**

Table 24: Proportions of fish catch marketed at the landing sites

	Baseline			Current			
	Catch (tonnes)	**Marketed (tonnes)**	**Proportion marketed**	**Catch (tonnes)**	**Marketed (tonnes)**	**Proportion marketed**	**Change in percent**
Control sites							
Sebagoro	5,231.2	3,180.0	60.79%	5,817.3	3,210.0	55.18%	-5.60%
Kawongo	700.6	511.0	72.94%	860.6	538.0	62.51%	-10.40%
Average	**2,965.9**	**1,846.0**	**62.24%**	**3,339.0**	**1,874.0**	**56.13%**	**-8.00%**
Project sites							
Iyingo	497.1	389.0	78.25%	556.0	458.0	82.37%	4.10%
Mugarama	451.0	327.0	72.51%	477.0	420.0	88.05%	15.60%
Bangladesh	423.6	308.0	72.71%	504.3	412.0	81.70%	9.10%
Kayei	361.4	278.0	76.92%	365.3	292.0	79.93%	3.00%
Panyimur	3,041.3	1,839.0	60.47%	425.1	--		--
Wanseko	6,695.6	4,970.0	74.23%	2,957.3	4,307.0	145.64%	68.60%
Kaiso	2,490.4	2,031.0	81.55%	932.6	--		--
Ntoroko	6,116.3	5,336.0	87.24%	6,685.8	5,958.0	89.11%	1.90%
Average	**2,509.6**	**1,935.0**	**77.10%**	**1,612.9**	**1,975.0**	**122.45%**	**17.04%**

Source: Survey data; NaFIRRI 2009, Mbabazi et al 2012

**Infrastructure at these landing sites not yet functional*
Derived from marketed fish data in Table 20 and catch data in Table 23. See ***Section 2.3.6*** *for computaion*

Table 25: Annual values of fish marketed at the landing sites (Shs million)

	Baseline					Current					Percentage change
	Nile perch	**Tilapia**	**Mukene**	***B. nurse/ N. bredoi***	**Total**	**Nile perch**	**Tilapia**	**Mukene**	***B. nurse/ N. bredoi***	**Total**	
Control sites											
Sebagoro	382	477		**13,118**	13,976	386	1,988	--	26,129	**28,504**	103.95%
Kawongo	219	200	2,298		2,716	167	381	4,945	--	**5,493**	102.24%
Average	**300**	**338**	**2,298**	**13,118**	**16,054**	**277**	**1,185**	**4,945**	**26,129**	**32,536**	**102.67%**
Project sites											
Iyingo	98	105	876	--	1,079	96	204	5,490	--	**5,790**	436.77%
Mugarama	85	84	2,450	--	2,618	69	164	6,720	--	**6,953**	165.57%
Bangladesh	67	143	1,155	--	1,366	110	184	5,610	--	**5,904**	332.35%
Kayei	60	126	1,672	--	1,858	52	147	4,446	--	**4,645**	150.03%
Panyimur*	567	598	--	**6,895**	8,060	--	--	--	--	--	--
Wanseko	1,218	1,529	--	**20,273**	23,020	1,021	2,132	--	33,347	**36,500**	58.56%
Kaiso*	419	656	--		1,075	--	--	--	--	--	--
Ntoroko	2,127	1,620	--	**16,008**	19,755	1,987	3,114		71,490	**76,591**	287.70%
Average	**580**	**608**	**1,538**	**14,392**	**17,118**	**556**	**991**	**5,567**	**52,418**	**59,532**	**247.78%**

Source: Survey data; NaFIRRI 2009, Mbabazi et al 2012

**Infrastructure at these landing sites not yet functional*

Table 26: Current respondents' perceptions to functionality and usage of improved facilities

	Control		Project		Percentage difference	
	Functionality	**Usage**	**Functionality**	**Usage**	**Functionality**	**Usage**
Clean water for fish handling	54.40%	60.40%	64.80%	62.70%	10.40%	2.30%
Sanitation facilities	56.10%	66.00%	72.70%	64.10%	16.60%	-1.90%
Fish handling facilities	44.20%	50.00%	78.40%	71.20%	34.20%	21.20%
Fish drying facilities	22.00%	20.50%	37.70%	33.50%	15.70%	13.00%
BMUs	92.90%	92.90%	98.80%	96.70%	5.90%	3.80%
Average	**53.92%**	**57.96%**	**70.48%**	**65.64%**	**16.56%**	**7.68%**

Source: Survey data

N.B: These are the percentages of respondents with different responses and no other details apply here.

Table 27: Respondents selling on the different markets at baseline

	Beach market	Factory agent/ industrial processors	Other local markets	Regional market
Control sites				
Sebagoro	23	4	4	1
Kawongo	20		8	
Average	**22**	**4**	**6**	**1**
Percent[1]	**69.35%**	**12.90%**	**19.35%**	**3.23%**
Project sites				
Iyingo	17	1	6	
Mugarama	19	2	11	
Bangladesh	21	3	11	1
Kayei	12		18	
Kaiso	16	2	7	2
Wanseko	24		10	
Panyimur	27		1	
Ntoroko	26		7	2
Average	**20**	**2**	**9**	**2**
Percent[1]	**65.32%**	**6.45%**	**28.63%**	**5.38%**

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 28: Respondents who rated access to fish trucks and market information as "good".

	Access to fish buying trucks		Knowledge of fish market prices	
	Baseline	**Current**	**Baseline**	**Current**
Control sites				
Sebagoro	15	21	16	23
Kawongo	15	24	12	21
Average	**15**	**23**	**14**	**22**
Percent[1]	**48.39%**	**72.58%**	**45.16%**	**70.97%**
Project sites				
Iyingo	7	21	8	13
Mugarama	7	18	14	24
Bangladesh	16	29	16	28
Kayei	14	24	16	22
Kaiso	13	9	18	20
Wanseko	18	18	20	24
Panyimur	11	14	9	10
Ntoroko	12	28	5	15
Average	**12**	**20**	**13**	**20**
Percent[1]	**39.52%**	**64.92%**	**42.74%**	**62.90%**
Percentage change				
Control sites		50.00%		57.14%
Project sites		64.29%		47.17%

Source: Survey data

Table 29: Respondents at project sites who reported receiving benefits from the infrastructure

	Improved fish handling	Increased fish price	Better community hygiene	Attract fish traders	Others	Total
Iyingo	12.0	9.0	2.0	1.0	0.0	24.0
Mugarama	15.0	7.0	1.0	5.0	0.0	28.0
Bangladesh	13.0	6.0	2.0	5.0	1.0	27.0
Kayei	14.0	1.0	4.0	5.0	1.0	25.0
Kaiso	11.0	5.0	3.0	2.0	0.0	21.0
Wanseko	19.0	0.0	2.0	3.0	0.0	24.0
Panyimur	7.0	5.0	3.0	6.0	2.0	23.0
Ntoroko	16.0	5.0	2.0	3.0	4.0	30.0
Average	**13.4**	**4.8**	**2.4**	**3.8**	**1.0**	**25.3**
Percent[1]	**43.15%**	**15.32%**	**7.66%**	**12.10%**	**3.23%**	**81.45%**

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

Table 30: Respondents at control sites who expected benefits from project infrastructure

	Boost business and development	Improved sanitation	Improved fish handling and quality	Improved standards of living	Better fish prices	Others	Total
Sebagoro	5.0	3.0	2.0	6.0	5.0	2.0	23.0
Kawongo	2.0	4.0	1.0	2.0	1.0	0.0	10.0
Average	**3.5**	**3.5**	**1.5**	**4.0**	**3.0**	**1.0**	**16.5**
Percent[1]	**11.29%**	**11.29%**	**4.84%**	**12.90%**	**9.68%**	**3.23%**	**53.23%**

Source: Survey data

[1]Percent of average out of the mean of 31 respondents per landing site

APPENDIX 1: LANDING SITES VISITED

	Name	District	Category
1	Sebagoro	Hoima	Control
2	Kawongo	Kayunga	Control
3	Iyingo	Buyende	Project
4	Mugarama	Serere	Project
5	Bangladesh	Amolatar	Project
6	Kayei	Apac	Project
7	Kaiso	Hoima	Project
8	Wanseko	Buliisa	Project
9	Panyimur	Nebbi	Project
10	Ntoroko	Ntoroko	Project

APPENDIX 2: KEY PERSONS MET

Name	Position	Institution
Dr. John S. Balirwa	Director	NaFIRRI
Jackson Wadanya	Ag. Head	DFR
Joyce Ikwaput Nyeko	Principal Fisheries Officer	DFR
Ben Twikirize	Senior Project Officer	ICEIDA
Maria Nandago	Senior Project Officer	ICEIDA
Alfred Akankwasa	Co-ordinator, QAFM Project	DFR
Sara Bawaye	Senior Quality Inspector	DFR
John Peter Achibu	DFO	Serere District
Anthony Otunga	DFO	Amolatar District
Medard	DFO	Apac District
John Muwadi	DFO	Buyende District
James Mwesigwa	DFO	Hoima District
Anthony Mzei	LC1 Chairman	Iyingo L.S.
Moses Namala	BMU Treasurer/ Fish buyer	Iyingo L.S.
SosPeter Kitos	Data collector	Iyingo L.S.
Ronald Sande	Data collector	Iyingo L.S.
Robert Okiria	BMU Chairman	Mugarama L.S.
Michael Olego	Enforcement Officer	Mugarama L.S.
Brenda Amilo	BMU Member	Mugarama L.S.
Michael Ebyau	BMU Member	Mugarama L.S.
Tony Odur	Chairman, Musoma BMU	Bangladesh L.S.
Damba Sam	V/Chairman, Manyanga BMU	Bangladesh L.S.
Rose Ngobi	Data collector, Manyanga BMU	Bangladesh L.S.
James Okello	Sec., Data collector, Musoma BMU	Bangladesh L.S.
James Obira	Assistant Fisheries Officer	Akokoro S.C
Denis Okello	LC1 Chairman	Kayei L.S.
Jane Abaka	BMU V/Chairperson	Kayei L.S.
William Igwor	BMU Member	Kayei L.S.
Julius Mugisa	BMU Secretary	Kayei L.S.
Scovia Okae	BMU Women Rep	Kayei L.S.

Name	Position	Institution
George Ogwal	AFO	Kabwoya S.C
Kosia Byarufu	BMU Chairman	Sebagoro L.S.
Alfred Ocuki	BMU Mobiliser	Sebagoro L.S.
Salim Sali	BMU Mobiliser	Kaiso L.S.
Dennis Wandigali	Clerk of Works, ICEIDA Project	Kaiso L.S.
Julius Mulindwa	Clerk of Works, ICEIDA Project	Kaiso L.S.
Norbert Tumusiime	BMU V/Chairman	Wanseko L.S.
William Kwonka	BMU Defense	Wanseko L.S.
Charles Tingira	BMU Health	Wanseko L.S.
Francis Gahwera	Fisheries Data Collector	Wanseko L.S.
Charles Onen	BMU Chairman	Panyimur L.S.
Isaac Warom	BMU Secretary	Panyimur L.S.
Fred Obedswa	BMU Sec. for Planning	Panyimur L.S.
Nabirye florence	AFO	Galiraya SC
Patrick Ozombo	District BMU Chairperson	Kayinga District
Zephania Kule	AFO	Ntoroko District
David Koor	BMU Chairman	Ntoroko L.S.

APPENDIX 3: WORK ITINERARY

Time Frame	Activities
March, 2013	• Held a meeting of the Technical Team from NaFIRRI, DFR and ICEIDA in Kampala to discuss baseline data collection design and tools
May, 2013	• Travelled to relevant institutions in Jinja, Kampala and Entebbe to obtain secondary data for reconstruction of baseline information. • Submitted revised budget and workplan to ICEIDA • Developed data collection tools for field study.
June, 2013	• Travelled to Bukungu Landing Site in Buyende District to train data collectors, pilot and pre-test questionnaire and checklists. • Travel to Lakes Kyoga and Albert to carry out secondary and field data collection in 5 Districts • Submitted interim progress report to ICEIDA and a request for second disbursement of funds.
July, 2013	• Completed field data collection in Kayunga and Ntoroko districts • Carried out data entry and analysis and draft report preparation.
August, 2013	• Submitted draft report to ICEIDA and DFR for comments. • Technical Team meeting for NaFIRRI, DFR and ICEIDA to discuss draft report.
September, 2013	• Submission of final report to ICEIDA and DFR

APPENDIX 4: DATA COLLECTION TOOLS

Questionnaire for Boat Owners, Crew, Fish Processors and Traders

CURRENT AND RECONSTRUCTED BASELINE SOCIO-ECONOMIC DATA FOR LAKES KYOGA AND ALBERT

1. Date of interview _____
2. Name of Interviewer _____
3. Lake _____ District _____
4. Sub –county _____
5. Landing site _____ GPS _____
6. Name of respondent _____

Demographic characteristics *(All respondents)*

7. Respondent`s sex [1] Male [2] Female
8. Age_____ (Years)
9. Which year did you begin to work at this landing site _____
10. Indicate your highest literacy and numeracy levels (*codes below*)

	2013	2008
Literacy		
Numeracy		

Literacy codes

[1] Able to read but not write in vernacular

[2] Able to read and write in vernacular

[3] Other levels (specify) _____

Numeracy codes

[1] Able to write numbers

[2] Able to add and subtract

[3] Able to multiply and divide

[4] Higher levels

11. Provide information on your household

	2013	2008
Marital status [1] Single [2] Married [2] Divorced [5] Widow(er)		
Number of spouse(s)		
Number of children below 18 years - boys		
Number of children below 18 years - girls		
Number of boys of school going ages of 6-18 years in school		
Number of girls of school going ages of 6-18 years in school		
Number of dependants other than spouse(s)		

12. What has been your main fishery activity? In 2013 _____ In 2008 _____
[1] Owning/ Renting-in boat(s) [3] Crew member [4] Fish processor
[S] Fish trader [6] Both Fish Trader and Processor [7] Other (specify) _____

13. Have you migrated from one landing site to another?

	[1] Yes [2] No	If Yes, main reason for migrating (*code*)
Prior to 2008		
Between 2008 and 2013		

Codes for reasons for migrating

[1] Seasonality of fish catch [2] Fish market search
[3] Insecurity [4] Disease outbreak
[5] Search for land [6] Others (Specify) _____

14. Average number of days operated in a week: In 2013 _____ In 2008 _____

15. What has been your main fish species targeted? (*code*) In 2013 _____ In 2008 _____

[1] Tilapia [2] Nile Perch [3] Mukene [4] Muziri/ ragoge
[5] *Alestes* (angara)/ *Hydrocynus* (ngasia) [6] *Bagrus. bayad* (lanya)
[7] Others (Specify) _____

Fish production cost data *(Boat owners and renters only)*

16. Do you own or rent a boat?: [1] Own[2] Rent

17. If you rent boat(s), how much do you pay per boat per day? _____ (Shs per boat per day).

18. If you own boat(s), provide information on the main type of boats owned:

	Year	**Number**	**Unit cost**	**Repair cost** *(Shs/half yearly)*	**Life time (years)**
Sesse	2013				
	2008				
Parachute	2013				
	2008				
Congo barque	2013				
	2008				
Other (specify) _____	2013				
	2008				

19. Have you used outboard engine(s)? [1] Yes [2] No

20. If Yes, give information on the engine(s) used.

Engine Horse power	**Year**	**Number**	**Unit cost**	**Repair costs** *(Sh/week)*	**Lifespan** *(Years)*
Less than 10	2013				
	2008				
10 to20	2013				
	2008				

Above 20	2013				
	2008				

21. Give information on fuel used foe outboard engine per fishing day:

	Year	Quantity *(Litres/ day)*	Unit cost *(Shs/ litre)*
Petrol	2013		
	2008		
Engine oil	2013		
	2008		

22. Give information on oars owned.

Oar Size	Year	Number	Unit cost	Repair costs *(Sh/month)*	Lifespan *(months)*
Small	2013				
	2008				
Large	2013				
	2008				

23. Give information on number of workers deployed and their payments per day:

	Year	Number	Payment *(Shs/ worker/ day)*
Fishing	2013		
	2008		
Net preparation	2013		
	2008		
Splitting fish open	2013		
	2008		
Other (specify) _____	2013		
	2008		

24. Provide information on the main type of gear used

Gear Types	Year	Number	Unit cost *(Shs/unit)*	Repair costs *(Sh/month)*	Life span *(Months)*
Gillnets - multifilament	2013				
	2008				
Gillnets - monofilament	2013				
	2008				
Long lines	2013				

	2008				
Small/ mukene seines	2013				
	2008				
Beach/ boat seines	2013				
	2008				
Cast nets	2013				
	2008				
Others (specify) _____	2013				
	2008				

25. How much did you pay for boat license the year before? In 2013 _____ In 2008 _____

26. How much did you pay for boat registration the year before? In 2013 _____ In 2008 ___

27. Give information on the type of floats and sinkers used:

Floater Type	**Year**	**Number**	**Unit cost**	**Lifespan** (*Months*)
Floatsfrom shops	2013			
	2008			
Plant floats	2013			
	2008			
Plastic materials	2013			
	2008			
Rubber floats	2013			
	2008			
Other floats (specify) _____	2013			
	2008			
Sinkers (specify) _____	2013			

28. Give information on the types of anchor used:

Anchor Type	**Year**	**Number**	**Unit cost**	**Lifespan** (*Years*)
Metal	2013			
	2008			
Stone	2013			
	2008			
Other (specify) _____	2013			
	2008			

29. What other important fishery related expenses have you incurred? (*Shs*)

Expenses	2013	2008
Food (per day)		
Capella/ kavera (per month)		
Charcoal/ firewood (per day)		
Cigarettes (per day)		
Blankets (per month)		
Other (specify) _____		

30. If you are a Mukene/ muziri/ ragoge fisher, give information on the costs incurred as below:

Item	Years	Number	Unit cost	Repair costs *(Shs per week)*	Life span
Lanterns	2013				
	2008				
Basins	2013				
	2008				
Drying nets	2013				
	2008				
Drying Racks	2013				
	2008				
Candles/ todoma	2013				
	2008				
Others (specify) __	2013				
	2008				

31. Average quantity of paraffin used per fishing day (*Litres*): In 2013 _____ Iin 2008 _____

32. Average cost of paraffin: (*Shs/litre*): In 2013 _____. In 2008 _____

Fish sales revenue data *(Boat owners and renters only)*

33. Provide information on the main fish species you catch

	Year	Low catch season		High catch season	
		Average quantities landed *(kg, head, basin/ day)*	Selling price (Shs/ unit)	Average quantities landed *(kg, head, basin/ day)*	Selling price (Shs/ unit)
N. perch	2013				
	2008				
Tilapia	2013				
	2008				
Mukene	2013				
	2008				
Muziri/ Ragoge	2013				
	2008				
Alestes (angara)/ *Hydrocynus* (ngasia)	2013				
	2008				
Bagrus. bayod (lanya)	2013				
	2008				
Other (specify) _____	2013				
	2008				

34. How many months are the catch seasons? [1] Low season _____ [2] High season _____

35. What has been the main source of your capital for financing fishing boats and gears? (*codes*)

In 2013 _____ In 2008 _____

[1] Own capital [2] Credit from SACCO [3] Credit from fish buyer(s)

[4] Credit from financial institution [5] Other (specify) _____

36. If credit financed, have your sales been tied to supplier of finance? [1] Yes [2] No

In 2013 _____ In 2008 _____

37. If financed from credit, have your fish prices been fixed by credit supplier? [1] Yes [2] No

In 2013 _____ In 2008 _____

Post harvest losses *(Boat owners/ renters, processors and traders)*

	Fish species (*code*)	
	2013	2008
38. Have you sometimes sold your fish at reduced prices due to spoilage? [1] Yes [2] No		
39. What has been the average reduced price at which you sometimes sold your fish?		
40. If Yes, what has been the main cause for spoilage? (*code*)		
41. What has been your proportion of fish sold at reduced prices in a day due to spoilage? (*kg, heads, basin)*		
42. What do you do with fish that cannot be eaten or sold fresh? (*code*)		
43. How many days a week have you thrown away fish because it could not be eaten or sold?		
44. What has been your average quantity of fish thrown away in a day? *(kg, heads, basin)*		
45. What measures have you adopted to minimize fish spoilage? (*code)*		

Codes:

Fish species:
[1] Tilapia [2] Nile Perch [3] Mukene [4] Muziri/ ragoge
[5] *Alestes* (angara)/ *Hydrocynus* (ngasia) [6] *Bagrus. bayad* (lanya)
[7] Others (Specify) _____

Causes for spoilage
[1] Poor processing [2] Poor storage [3] Poor handling
[4] Other (specify) _____

Spoilage control measures
[1] Icing [2] Early selling [3] Quick transportation
[4] Salting [4] Salting [5] Deep frying
[6] Other (specify) _____

Fate of fish that cannot be eaten or sold fresh
[1] Thrown away [2] Fed to animals [3] Process [4] Other (specify) _____

Provide information on fish you have been processing, if any

	Fish species (*code*)	
	2013	2008
46. What has been the main reason for processing your fish? (code)		
47. How many days a week have you processed some or all your catch		
48. What has been your average quantity of fish processed in a day?		
49. What has been the average price at which you sold your processed fish?		

Codes: Processing methods

[1] Salting/ sun drying
[2] Smoking
[3] Deep-frying
[4] Other (specify) _____

Reasons for processing fish:

[1] To preserve from spoilage
[2] To improve taste
[3] To improve price
[4] Other (specify) _____

Access to improved facilities *(All respondents)*

50. Provide the following information on your access to handling, processing marketing and livelihood facilities

	Functional through the year [1] Yes [2] No		**Used by respondent** [1] Yes [2] No [3] Sometimes	
	2013	2008	2013	2008
Clean water				
Sanitation facilities				
Fish handling table/ slabs				
Dry fish market facilities				
BMU leadership				

Access to markets and market information *(All respondents)*

51. What are the major markets for your fish?
[1] Beach market [2] Factory agents/Industrial processors [3] Local market not at the beach
[4] Another District [4] Regional market [5] Other [specify] _____

52. Provide the following information on your access to markets and market information

	2013	2008
Access to fish buying trucks		
Knowledge of prevailing fish market prices		

Codes [1] Poor[2] Fair [3] Good

53. Do you have traders book your catch?

In 2008 [1] Yes [2] No In 2013 [1] Yes [2] No

Access to health and education *(All respondents)*

54. Provide information on the education and health services:

	Functional through the year [1] Yes [2] No		**Used by your household** [1] Yes [2] No [3] Sometimes	
	2013	2008	2013	2008
Primary school				

Health centre				
HIV/AIDS information				

55. Has any member of your household suffered from water borne/ water related disease in the previous year?

	2013	2008
Bilharzia		
Cholera		
Diarrhea/ dysentery		
Malaria		

Expenditure patterns *(All respondents)*

56. What percentage has fishery activity contributed to your income?
In 2013: _____ % In 2008: _____ %

57. What alternative activities have you been involved in?

	[1] Yes [2] NO	
	2013	2008
Crop farming		
Livestock keeping		
Commodity trade		
Other (specify) _____		

58. Indicate your average expenditures on the most important items (Shs)

Expenditure category	2013	2008
Food items (per day)		
Health care (per month)		
Education (per term)		
Clothing (per half year)		
Savings (per month)		
Others (specify) _____		

Food security status *(All respondents)*

59. What has been the average number of meals eaten in your household in a day?
In 2008: _____ In 2013: _____

60. What is the average quantity of fish consumed by your household per day (*kg*)?

	Quantity of fish
2013	
2008	

Asset ownership *(All respondents)*

61. Provide information on other assets owned at the beach

	2013		2008	
Assets	**Number**	**Unit cost** (Shs)	**Number**	**Unit cost** (Shs)
Brick house and iron roofed				
Vehicle				
Motorcycle				
Land (acres)				
Mobile phone				
Radio				
Bicycle				
Others (specify)				

For improved landing sites only *(All respondents)*

62. Mention the main benefits from the improved landing site: _____

63. Do you consider your household livelihood to have improved since 2008?

[1] Yes [2] No.

For unimproved landing sites only *(All respondents)*

64. What benefits will an improved landing site bring you benefits? _____

Thank you for your information

Key Informant Interview Checklist for BMUs and DFOs

CURRENT AND RECONSTRUCTED BASELINE SOCIO-ECONOMIC DATA FOR LAKES KYOGA AND ALBERT

Date of interview _____

Name of Interviewer _____

Lake _____ District _____

Sub –county_____

Landing site_____ GP _____

Name of respondent _____

Population of landing site: In 2013 _____ In 2008: _____

Volume and prices of fish landed from the landing site

	Annual quantities of fish species landed at the landing site (Kgs)		Average prices of fish species at landing site (Shs/kg)	
	2013	2008	2013	2008
N. perch				
Tilapia				
Mukene				
Muziri				
Ragoge				
Alestes (angara)				
Hydrocynus (ngasia)				
Bagrus bayad (lanya)				
Other (specify) ____				

Volume of fish marketed from the landing site

	Annual quantities of fish species marketed from the landing site (Kg)		Daily quantity of fish species marketed from the landing site (Kgs)	
	2013	2008	2013	2008
N. perch				
Tilapia				
Mukene				
Muziri				
Ragoge				
Alestes (angara)				
Hydrocynus (ngasia)				
Bagrus bayad (lanya)				
Other (specify) ____				

Availability of improved facilities

	Available [1] Yes [2] No		Functionalthroughtheyear [1] Yes [2] No	
	2013	2008	2013	2008
Clean water				
Sanitation facilities				
Fish handling table/ slabs				
Dry fish market facilities				
BMU leadership				

Availability of markets and market information

	2013 [1] Yes [2] No [3] Number	2008 [1] Yes [2] No [3] Number
Fish buying trucks		
Display tables		
Storage facilities		
Information of prevailing fish market prices		

Availability of health and education facilities and services

	Available [1] Yes [2] No		Functionalthroughtheyear [1] Yes [2] No	
	2013	2008	2013	2008
Primary school *(distance in km)*				
Health centre*(distance in km)*				
HIV/AIDS information				

Main water-borne diseases at the landing site

	2013 [1] Yes [2] No	2008 [1] Yes [2] No
Bilharzia		
Cholera		
Diarrhea/ dysentery		
Malaria		

APPENDIX 5: PROJECT OUTCOMES AND IMPACTS AND THEIR INDICATORS

	Indicators
Project impact Improved livelihoods of people in fish dependent communities	1. % increase in household incomes among fishing dependent communities in the project area from baseline position:. 2. % increase in livelihood indices of households in fish dependent communities from baseline: 3. % Increase in households who perceive improvements in their livelihoods from baseline situation.
Project outcome To increase volume of marketed fish both in the domestic and export markets through reduction in post harvest losses	1. % reduction of post harvest losses in the project improved landing sites (focal areas) from baseline, and in comparison with control group of unimproved landing sites in the same area 2. % increase in volume (tons) of fish marketed from the project improved landing sites (focal areas) from baseline, and in comparison with control group of unimproved landing sites in the same area 3. % increase in proportion of captured fish marketed from the project improved landing sites (focal areas) from baseline, and in comparison with the control group in unimproved landing sites in the same area. 4. % increase in the value (in UGX & US$) of fish marketed from the project improved landing sites (focal areas) from baseline, and in comparison with control group of unimproved landing sites in the same area 5. % of fishing population in the project focal area with access to improved functional infrastructure and facilities for quality fish handling and marketing. • % of fishing population with access to markets and market information.

APPENDIX 6: TERMS OF REFERENCE (TORS) FOR THE CONSULTANCY SERVICE

Terms of Reference for a Service Provider to Reconstruct the Project Baseline Data for Quality Assurance for Fish Marketing Project (QAFMP)

January, 2013

1. BACKGROUND

ICEIDA has been supporting the implementation of QAFMP under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Department of Fisheries Resources (DFR). The project focuses on reducing poverty and improving the livelihoods of fish dependent communities through improving the quality and safety of fish for domestic, regional and export market. The QAFMP become operational in 2009 and is planned to end in 2013. The project has been operational in 10 districts surrounding Lake Albert (Ntoroko, Hoima, Bulisa and Nebbi) and Lake Kyoga (Nakasongola, Apac, Amolatar, Soroti, Serere and Buyende).

After three years of QAFMP implementation, an external midterm review was commissioned to establish the extent to which the project is likely to meet its objective, determine the challenges could be addressed in the remaining period of the project. The MTR was conducted between March and June 2012 and the final report was produced in November 2012. The MTR found, among others, that the formulation of the project strategy and the monitoring and evaluation framework was not adequate. The main weakness in the formulation of horizontal logic was lack of baseline data and performance targets for outcome and impact indicators against which progress can be assessed.

2. PURPOSE AND SPECIFIC OUTCOME OF THE PROJECT

The development objective of the QAFMP is to improve the livelihoods of the fish dependent communities. The purpose of the QAFMP project is to increase the volume of marketed fish both in domestic and export markets through reduction in post harvest losses.

3. PURPOSE OF BASELINE

The purpose of the assignment is to reconstruct baseline data and analysis describing the situation prior to QAFMP inspection in 2008, against which progress can be assessed. The baseline data and analysis should be aligned to the project logframe and the monitoring and evaluation performance framework.

4. THE SCOPE OF WORK

The service provider will design and conduct a baseline data reconstruction exercise using a combination of methods to ensure that the date collected is as accurate and reliable as is practical possible. The methods that could be used include the following.

1. **Secondary Sources**
   - Social economic surveys/Household survy
   - Statistical Abstract by UBOS
   - Catch assessment frame survey report.
   - QAFMP Baseline report of 2008.
   - Needs Assessment reports

- Final MTR report of QAFMP 2012
- QAFMP project document, 2009

2. **Administrative Data**
   - Analysis of data on fish marketed (compiled from fish movement permits and fish inspectors report
   - DFR/MAAIF reports
   - Sector reports (Education, Health, Water etc)
   - District profiles/reports
   - QAFMP project reports
3. **Primary Data Sources From specific Project Sites using the following methods**
   - Recall techniques
   - Key Informants (Key fish buyers, factories, exporters etc)
   - Group based interviews
     a. Focus group discussion
     b. Participatory assessment techniques

Objectives

The service provider should:

- Design a baseline study methodology in collaboration with the project management team
- Conduct the baseline reconstruction study in collaboration with the project management team
- Develop systems and a tool kit for DFR and Districts to collect data on outcome indicators and link it to the existing data collection at DFR/ MAAIF and to the project M&E arrangements.
- Conduct activities to build the capacity of DFR and the District staff in project M&E data collection, analysis and reporting.

5. **EXPECTED OUTPUTS**

- Comprehensive baseline data collection/study design
- Comprehensive baseline data collection and analysis report
  - Data collection plan, methodology during design and execution phase
  - An analysis of collected data in relation to the LFA and M&E arrangements
  - Recommendations
- An accessible (electronic and hard copy data)base with all the data collected during the study
- A capacity building report that provides details on the implementation of the training session for DFR and district staff in M& E project data collection, analysis and reporting
- A tool kit to collect data on outcome indicators linked to existing DFR and the project M & E arrangements.

6. REQUIRED EXPERTISE

General requirements for the team to undertake the assignment

- Relevant educational qualifications
- Relevant quantitative and qualitative skills
- Professional expertise and experience in M&E and baseline research
- Development expertise and experience
- Knowledge of participatory methodologies
- Gender sensitivity
- Sensitivity to the project principles

Specific requirements related to the project

- Adequate knowledge of the Uganda`s lake District Profiles
- Knowledge of the relevant country sector policies
- A history of performing similar evaluations
- Knowledge of Uganda Public Service frameworks
- Knowledge of development and capacity building frameworks
- Knowledge of national quality assurance frameworks and systems

7. TIMELINE AND PROGRESS REPORTS

This will be negotiated based on the proposal submitted. Expected to take not more than 30 working days.

8. BUDGET

The budget will be negotiated based on the financial proposal submitted by the service provider.

Appendix 7: RESEARCH TEAM MEMBERS

1	Dr. Konstantine Odongkara	NaFIRRI
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3	Bwambale Mbilingi	NaFIRRI
4	Sam Bassa	NaFIRRI
5	Mark Olokotum	NaFIRRI
6	Chrispino Okwong	NaFIRRI
7	Henry Ochaya	NaFIRRI
8	Agnes Nasuuna	NaFIRRI
9	Elizabeth Naula	NaFIRRI
10	Safina Namatovu	NaFIRRI
11	Vincent Bagaga	NaFIRRI
12	Abdalla Hatinda	DFR